

BARRIERS AND FACILITATORS TO ENGAGING IN HEALTH PROMOTING
BEHAVIORS AMONG NURSES IN AN URBAN SETTING:
A MIXED-METHOD STUDY

by
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ABSTRACT

The purpose of this study was to assess the prevalence of health promoting behaviors among nurses and to examine the barriers and facilitators to engaging in health promoting behaviors. Health promoting behaviors were defined as 1) having quit smoking or never having smoked; 2) engaging in at least 30 minutes of exercise 5 days a week; 3) consuming at least 5 servings of fruits and vegetables daily; and 4) maintaining their Body Mass Index (BMI) within healthy range. The independent variables, including barriers (work-related stress, shift work), facilitators (social support, hardiness), and other factors (self-efficacy, intention, planning and individual characteristics), were identified from the conceptual framework, Health Action Plan Approach (HAPA), and measured in a survey filled out by 236 bedside nurses at an urban hospital setting. The independent variables were examined in their relationship with the dependent variables listed above and tested by using chi-squares, correlations, and a series of multiple logistical regression analyses. In addition, this study conducted 4 focus groups, where the participants were invited only if they had filled out the survey and agreed to be contacted for further study. With a total N of 14 (12.7% response rate), content analysis was utilized on the transcribed focus group interviews and categories emerged to illustrate nurses' view on nurses engaging in health promoting behaviors. There were statistically significant positive associations seen with some of the antecedent variables and health promoting behaviors. From the focus group interviews, 12 hour shifts and work-related stress are two of the themes that emerged as being barriers for nurses in engaging in health promoting behaviors. From the findings, workplace programs along with social support found at work may be successful in helping nurses lose weight or stop smoking. Future

research may explore the concept of hardiness and other possible unique traits that nurses may have as a protective factor to healthy lifestyle.

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CHAPTER 1: INTRODUCTION

A. Background & Significance

Chronic disease is a serious problem in the US, accounting for 7 out of 10 deaths (Kung, Hoyert, Xu & Murphy, 2005) and costing more than 75% of the health care dollars treating people with chronic diseases (Center for Disease Control, 2011).

According to the Center for Disease Control (CDC), nearly half of the American adults live with at least one chronic disease (2011). A quarter of those with at least one chronic disease are said to have one or more significant limitation(s) with their daily activities (2011) that may decrease one's work productivity or force one to early retirement.

A substantial body of literature supports that chronic diseases are preventable or manageable by adhering to health promoting behaviors (Willet, Koplan, Nugent, et al. 2006; Roberts & Bernard, 2005; Bavikati, Sperling, Salmon, et al. 2008; Lindström, Ilanne-Parikka, Peltonen, et al. 2006; McCullough, Feskanich, Stampfer et al, 2000). Health promoting lifestyle behaviors commonly include consuming a nutritious diet, maintaining a healthy weight, performing physical activity and not smoking. By engaging in these four health promoting behaviors or lifestyle factors, one can reduce the risk of developing common chronic diseases such as diabetes, heart disease, stroke and cancer by 78 percent compared to someone engaging in none of the lifestyle factors (Ford et al, 2009). However, in the US, one-third of all adults are not meeting the recommendation for physical activity. Three-fourths are not consuming the recommended 5 or more servings of fruits and vegetables a day; and one-fifth is still smoking (CDC, 2011).

Nurses numbering close to 3 million (U.S. Dept of Health and Human Services, Health Resources and Services Administration, 2010) represent one of the biggest

employed groups in the United States and worldwide. In the healthcare industry, nurses are the largest employed professionals providing direct health services around the clock to the patients. Health and productivity of the nurses should be seen as important, especially if they are taking care of our loved ones. Nursing, however, is an occupation that has been associated with high presenteeism (Aronson, Gustafson & Dallner, 2000), where nurses may be present at work but do not perform at their optimum because of their health conditions. In addition, the health status of nurses is a key determinant in their decision to retire early; nurses tend to opt for early retirement if they are in poor health compared to nurses who rated their health as good (Friis & Ekholm 2007).

As a profession, nurses help the individuals, families, and communities to achieve their optimal health by promoting health behaviors (American Nurses' Association, 1998). When looking at their own health, nurses' adoption of health promoting behaviors is not too different from the general public or is worse for some indicators. For example, the national datasets collected from Nurses' Health Study 2 (NHS2) and the 2007 Behavioral Risk Factor Surveillance System indicated that nurses in the US have a slightly higher rate (26.3%) of obesity when compared to all women (25.9%) (Fair, Gulanick & Braun, 2009). Also, nurses have been shown to have poorer health behaviors when compared with other health care professionals. According to data from the Tobacco Use Population Surveys from 2006-2007, nurses had a significantly higher smoking prevalence of 10.73% in comparison to physicians' and pharmacists' prevalence of 2.31% and 3.25%, respectively (Sarna, Bialous, Sinha, Yan, & Wewers, 2010). Similarly, a national survey of U.S. health professionals found a prevalence rate of 13% for nurses

who smoke, which doubles the prevalence rate of a smoking rate of 6% for other health professionals (Tong, Strouse, Hall, 2010).

Nurses have an important part in the healthcare delivery system; and it is critical that they maintain a healthy lifestyle so that they will continue to help their patients to heal and maintain their health. During a time when we are in a danger of nursing shortage, we need to foster an environment where nurses want to prolong their nursing career. This study will contribute to improving their health by identifying factors that are associated with critical health behaviors that are known to decrease the rising prevalence of chronic diseases.

B. Statement of Problem

Health care providers, especially nurses, are in the ideal position to promote behavioral change through patient education (Saarmann, Daugherty, & Riegel, 2000; Miller & Fain, 2006). The health care providers' own personal health has been significantly associated with the likelihood of providing primary counseling (Schwartz et al., 1991; Lewis, Clancy, Leake, & Schwartz, 1991). Currently, there is a lack of research on nurses and other health care professionals and their engagement in health promoting behaviors. In particular, no previous research used a systematic approach specifically targeting nurses in terms of their participation in healthy lifestyles and the factors that influence their participation; and hence, our understanding about the topic has been very limited.

More research is needed to explore the barriers and facilitators of nurses engaging in health promoting behaviors. To address the gap, the purpose of this study is to assess

the prevalence of health promoting behaviors among nurses and to examine the barriers and facilitators that affect nurses' decisions to engage in health promoting lifestyle.

C. Specific Aims & Hypothesis

The **specific aims** are as follows:

1. Identify the prevalence of health promoting behaviors among nurses employed at an urban teaching hospital. In this study, health promoting behaviors include the following: engaging in 30 min of exercise 5 days a week; maintaining their Body Mass Index (BMI) within healthy range; consuming at least 5 servings of fruits and vegetables daily; and having quit smoking or never having smoked.
2. Examine the factors influencing nurses' adoption of the health promoting behaviors.

Hypothesis 2.1. Among employed nurses, those with higher self-efficacy will be more likely to engage in the key health promoting behaviors.

Hypothesis 2.2. Among employed nurses, those who do more planning will be more likely to engage in the key health promoting behaviors.

Hypothesis 2.3. Among employed nurses, those with higher intention will be more likely to engage in the key health promoting behaviors.

Hypothesis 2.4. Among employed nurses, those with higher work-related stress will be less likely to engage in the key health promoting behaviors.

Hypothesis 2.5. Among employed nurses, those with higher social support will be more likely to engage in the key health promoting behaviors.

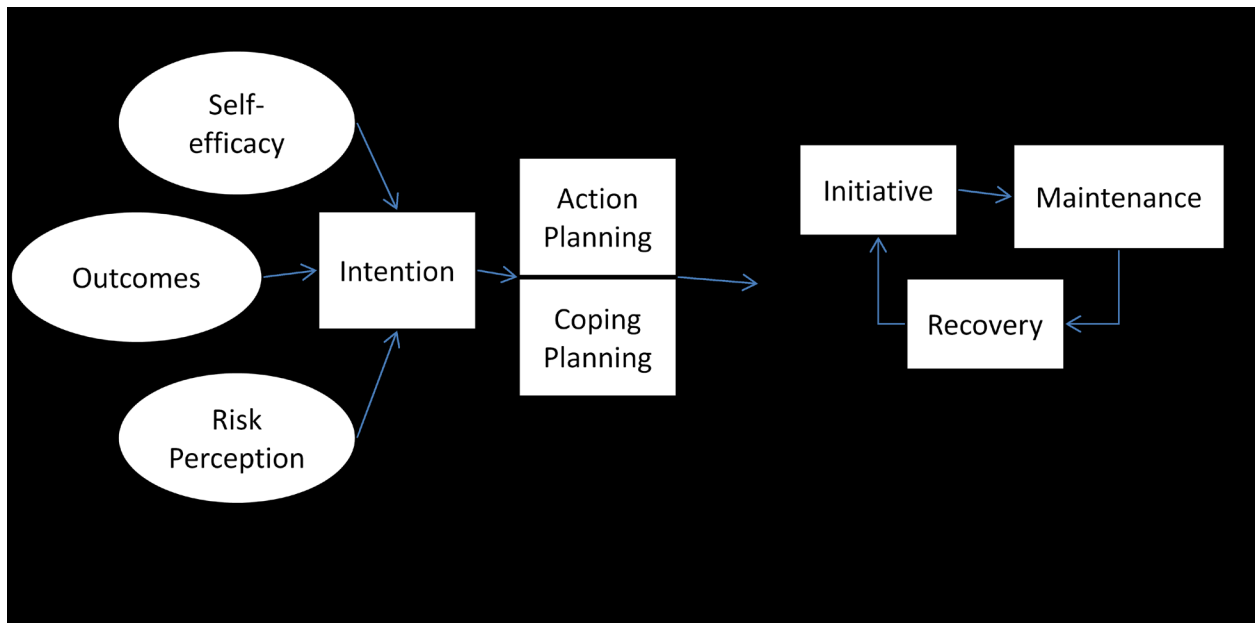
Hypothesis 2.6. Among employed nurses, those with higher hardiness will be more likely to engage in the key health promoting behaviors.

3. Explore expectations and cultural norms associated with engaging in health promoting behaviors among nurses.

D. Framework

Health Action Process Approach (HAPA) is the framework (Figure 1) used to help guide this study in finding the predictors and barriers to a person engaging in health promoting behaviors among nurses employed in an urban hospital. HAPA has two phases called motivation and volition phase; and it is useful in identifying factors leading to the adoption of different behaviors (Schwarzer 2008). In the motivation phase, there are three antecedents (risk perception, outcome expectancies, and action self-efficacy) that help to influence intention. Schwarzer adds a mediating variable between intention and behavior called planning. Planning is a construct that divides into two different facets: coping planning and action planning. Action planning is a volitional process that will define the intention by specifying the what, where, when and how the action will be carried out. Coping planning is the process when one anticipates any barriers that may hinder the intention being carried out and has a specific plan as to overcome the barriers and difficulties. In the volition phase, action or the behavior has been initiated but then requires a self-regulatory process to maintain the behavior. Self-efficacy is a variable that is carried through both phases, as it helps the perseverance of the self-imposed goal/action.

Figure 1. Health Action Process Approach



E. Definitions of Terms

Conceptual definitions of key terms used in this study are as follows:

Action Planning is a continuous process that identifies the “when,” “where,” “how,” “how often,” and/or “with whom” (Schwarzer, 2008).

Coping Planning constructs strategies to overcome possible barriers to the action being planned (Schwarzer, 2008).

Health promoting Behavior is defined as personal actions to sustain or increase wellness borrowed from Nursing Outcomes Classification.

Healthy Eating for this study will be defined by U.S. Department of Agriculture as consuming at least the recommended 5 servings of fruits and vegetables.

Healthy Weight for this study will use body mass index (BMI). As defined by Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and

Obesity in Adults, a BMI of 18.5 to 24.9 is considered to be in the healthy range (National Heart, Lung and Blood Institute, 1998).

Behavioral Intention refers to a person's decision toward a behavior that includes their motivation toward that goal (Schwarzer, 2008).

Motivational Phase is characterized by different motivation or influences when forming a behavioral intention (Schwarzer, 2008).

Outcomes Expectancies are negative or positive outcomes formed by a person dependent on their personal beliefs (Schwarzer, 2008).

Physical Activity guidelines for American adults are defined by the U.S. Department of Health and Human Services as engaging in 2 hours and 30 minutes of moderate intensity activity per week (2008).

Risk Perception is the same as the person's perceived susceptibility/vulnerability to a health threat (Schwarzer, 2008).

Self-Efficacy is the belief that he or she is capable of attaining the goal (Schwarzer, 2008).

Social Support is defined as a network of family, friends, neighbors, and community members that is available in times of need to give psychological, physical, and financial help.

Volitional Phase is the process where intention is morphed into the desired health behavior or action by going through processes including planning, initiation, maintenance and relapse (Schwarzer, 2008).

F. Summary & Contribution to Literature

In summary, as the prevalence and severity of risk factors for the development of chronic conditions continues to increase in adults, the need for prevention-focused interventions and adoption of a healthy lifestyle plays a prominent role in addressing the current rise in the health care cost trends and poor health outcomes. Nurses may develop chronic conditions just like their patients and are in the position to influence the behavior of the patients with similar risk profiles. Little is known about nurses' engagement in health promotion behavior or what influences those behaviors. Results of this study will add to the literature in that it will provide an understanding of why nurses are or are not engaging in health promoting behaviors. Understanding the barriers and facilitators lends itself to tailoring health promotion programs for nurses who may be at risk for developing chronic diseases so that they may take advantage of what is being offered through their workplace and/or health insurance.

CHAPTER 2: LITERATURE REVIEW

A. Introduction

Health care professionals are more likely to provide education and counseling on health promoting behaviors to their patients if they themselves are engaging in these behaviors (Schwartz et al., 1991; Lewis, Clancy, Leake, & Schwartz, 1991). Furthermore, research has shown that there is a link with nurses who are in poor health conditions with early retirement and loss of productivity at work. Despite their nursing education, nurses are no better off in engaging in not smoking, maintaining a healthy weight, exercising regularly or eating the recommended amount of fruits and vegetables. In order to improve the health status of nurses, more research is needed examining the barriers and facilitators between nurses and their engagement in health promoting behaviors. In this chapter, we look closely at nurses' health behaviors; and, by utilizing an adapted version of the Health Action Process Approach (HAPA), we critically review the relationships of self-efficacy, intention, planning, resources, and barriers in the model from the literature.

B. Theoretical Framework

Health Action Process Approach (HAPA) is a social-cognitive model that explains how an individual's health behaviors or actions are influenced by a number of factors such as intention to adopt a certain behavior (Schwarzer 1992, 2008). Popular social-cognitive theories such as Theory of Planned Behavior have an assumption that intention is a good predictor of behavior change. However, it has been well-documented that intention does not always get translated into action (Johnston, Johnston, Pollard, Kinmonth, & Mant 2004; Orbell & Sheeran, 1998). HAPA addresses the gap between intention and behavior by positing additional transitional factors (Schwarzer 1992, 2008).

Though relatively new, HAPA has been well-tested in health behaviors such as physical activity, dietary behaviors, seat belt use, dental hygiene, and breast self-examination (Table 1).

Table 1. Application of HAPA

1st author, yr	Study design	Target Behavior	Study Purpose	Results
Luszczynska & Schwarzer, 2003	Randomized intervention study (N=418)	Breast Self-examination (BSE)	Explored rel. between volitional factors and behavior (BSE).	Self-efficacy was best predictor of planning and planning was best predictor of BSE
Lippke, Ziegelmann, Schwarzer, 2004	Prospective study 6 month follow up (N=560)	Physical Activity	Examined if planning intervention was beneficial at different stages of behavior change process.	Planning intervention benefited patients with intention; but did not benefit those without or those already doing it.
Schuz, Sniehotta & Schwarzer, 2007	Prospective study 4 weeks follow up. (N=288)	Dental Hygiene	Examined the distinction among the three mindsets and behavior.	In preintentional stage, stage progression was explained by action planning, whereas, coping planning and self-efficacy predicted intenders.
Schwarzer, Schuz, Ziegelmann, Lippke, Luszczynska, & Scholz, 2007	Longitudinal Research design with 4 points in time (N=298, age 16-21yrs)	Seat Belts Use in Adolescent Passengers	Examined the motivational and volitional factors to account for behavior.	Planning and self-efficacy emerged as mediators. Jointly, accounted for 42% of the seat belt use variance.
Renner, Kwon, Yang, Paik, Kim Roh, Song, & Schwarzer, 2008	Prospective study 6 month follow up in South Korea (N=697)	Dietary Behavior	Examined the role self-efficacy and planning play in context of dietary behavior.	Self-efficacy has equal predictive power in men and women. Intention and planning was relevant in women only.

Figure 2 depicts the theoretical framework of this study based on HAPA.

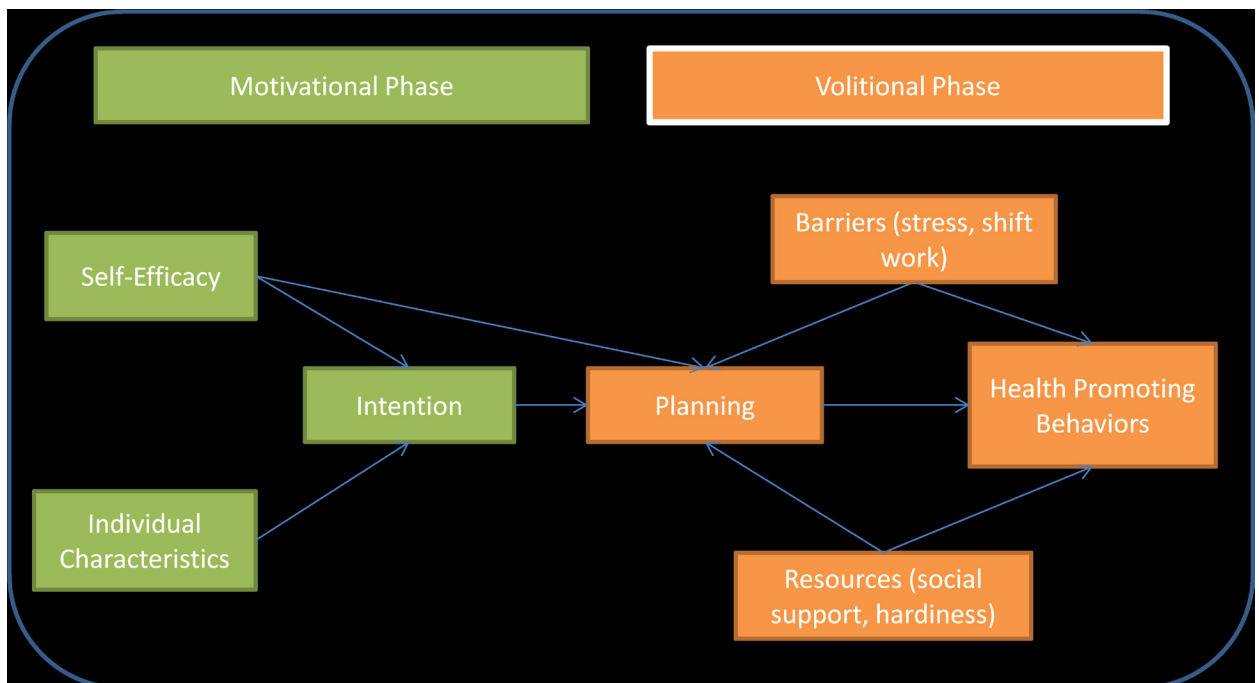
According to Schwarzer (1992, 2008), health behavior or action is influenced by multiple factors that are processed in the following two phases: motivational and volitional phase. The motivational phase includes the pre-intention motivational processes that are inclusive of **antecedent variables** as well as the individual's **intent** to adopt a behavior action or to change a risk behavior. An explicit intention must be present in an individual;

otherwise, the habitual behavior is unlikely to change. In HAPA, the behavioral intention is a predictor for the subsequent behavior. In the motivational phase, there are three antecedent variables that help to formulate the intention: risk awareness, self-efficacy, and outcome expectancies. Risk awareness looks at an individual's perceived vulnerability to a health threat. It is a weak predictor and considered as a distal variable. A minimum level of risk perception should be present in order to stimulate the individual to consider any behavior change. Self-efficacy is defined as an individual's perceived capabilities to master a task successfully (Bandura, 1977). Outcome expectancies are formulated by the individual's beliefs, and they may either be positive or negative. The direct influence of outcome expectancies is low if self-efficacy plays a role as a mediator between outcome expectancy and intention (2008). Of the three predictors, self-efficacy has been consistently found to have a strong relationship with intention (Schwarzer et al, 2003). There is limited and inconsistent evidence to support the relationships of risk awareness or outcome expectancies to intention of adopting health behaviors. Therefore, for the purpose of this study, we will focus on self-efficacy.

The second phase of HAPA entails the volitional process that includes the planning and the desired outcome/action. Planning involves the how, when, and where to carry out the action. The volitional phase is influenced by self-efficacy since the action plan is dependent on the individual's perceived ability as well as their experience. In order to allocate the available resources and counter any barriers, self-efficacy plays a role in strongly influencing the construction of the action. Subsequently, self-efficacy plays a role in determining the amount of effort in carrying out the action and maintaining the action. In this model, there is no difference between refraining from a

behavior such as smoking and performing a behavior such as increasing physical activity. Both incorporate the motivational and volitional phases; in other words, both require an intention to make the change and plan to carry out the action. Self-efficacy and planning have been tested as strong predictors for health behaviors such as physical activity (Sniehotta, Schwarzer, Scholz, & Schuz 2005).

Figure 2. Modified Health Action Process Approach*



***Adapted from Schwarzer's Health Action Process Approach (2008)**

C. Nurses' Health Behavior

The Centers for Disease Control and Prevention (CDC) published behavioral guidelines to promote health and prevent chronic diseases such as cardiovascular disease, cancer, and arthritis (2009). They include smoking cessation, obesity control, healthy diet, and regular physical activity. In the following paragraph, these four key health behaviors will be reviewed one by one, particularly in the nurse populations. Overall, the

literature on nurses' health behaviors is relatively limited. In addition, most available literature is focused on smoking. Consequently, the review of literature in this section was expanded to include previous research in relevant fields such as employee health promoting behaviors.

1. Smoking

Smoking is a significant public health concern not only in the U.S. but also in many other countries. In the United States, the current prevalence rate of smoking is 18% among females (CDC, 2010) which is a decrease from the smoking rate in the 1980s of 29% among females. There is a similar decreasing trend among nurses. Nelson et al. (1994) used Health Interview Surveys conducted in the United States between 1974 and 1991 to see that smoking also declined among nurses (RNs) from 31.7% to 18.3%. Unfortunately, nurses' smoking behavior is not unlike the general female population despite nurses' education on the potential health consequences of smoking.

Nurses who are educated in health promotion should demonstrate healthier behaviors than the general public. However, this is not the case in other countries, as well. In a study conducted in Ireland, the smoking prevalence rate among nurses was 26% as compared to the prevalence rate of 28% in general females (McKenna et al., 2001). McKenna et al. used a questionnaire to survey 1,074 nurses as to smoking prevalence and their desire to quit the habit (2001). Results indicated that those nurses who smoked were less willing to take on the role of a health promoter with patients who smoked. Similarly, another descriptive study on 430 nurses in Ireland (70% response rate) revealed that 21% of nurses were current smokers and 23% were ex-smokers

(O'Donovan, 2009). Smokers were significantly less likely than non-smokers to agree with the statement that '*cigarette smoke represents a major risk to health.*'

Booth and Faulkner (1986) conducted a mixed methods study to explore cigarette smoking among nurses in northwest England (N=563; 95% of the sample were nursing students). The prevalence of nurses who smoked (36%) and the prevalence of general female smokers of 16-49 years of age (37%) were similar. In the study, those who still smoked believed that cigarettes were not harmful to your health, and there was a difference in their responses to giving advice on health education to patients compared to nurses who did not smoke. Merrill et al. assessed smoking prevalence, attitudes, and perceived patient counseling responsibilities among 262 practicing nurses in Amman, Jordan (2010). Smoking prevalence was 42% for male nurses and 13% for female nurses. Nurses did not strongly agree that they should be involved in counseling patients about smoking, though approximately 41% indicated that they had received training on counseling patients about smoking. Nurses who smoked were significantly less likely to believe their counseling of patients about smoking could be effective. Similarly, in a cross-sectional study among 101 physicians and 524 nurses from primary health centers and a city hospital in Portugal (Ramos, Vinagre & Cardoso, 2009), smokers were less likely to see themselves as role models (50.8%) than non-smokers (74.1%).

Other studies show that previous engagement in smoking behavior could potentially empower nurses to assume the role as an educator. For example, in a study of 289 randomly selected nurses in Australia (response rate=29%), Dwyer et al. found that mental health nurses who previously smoked felt that they had the knowledge to educate members/patients on quitting smoking; and they had the belief that they may take on the

role of health promoters (Dwyer, Bradshaw & Happell, 2009). The beliefs that an individual had the right to smoke and that a dedicated area should be provided for smokers, were significantly higher among the mental health nurses who smoked (95.5%) than mental health nurses who did not smoke (67.5%).

In summary, smoking continues to be a problem among nurses nationally and internationally. The preventable nature of smoking-related diseases places a major responsibility for health promotion on all health professionals. Previous research has documented that nurses who smoke are less likely to see themselves as role models and less likely to provide smoking education when compared to their non-smoking counterparts. The results suggest the importance of continuing to work with nurses to bring the prevalence rate down below the general public's rate.

2. Obesity

Obesity is an epidemic problem in the United States. Statistics from 2007-2008 National Health and Nutrition Examination Survey (NHANES) indicated that 33.8% of adults (≥ 20 yrs old) were obese in the general population (Flegal, Carroll, Ogden, & Curtin, 2010). This is a slight increase from 2003-2004, when the obesity rate was 32.2% (Ogden, Carroll, Curtin, & McDowell, 2008). Though few studies exist, available data indicate that obesity is also a problem among nurses.

In a mail survey sent to 4,980 nurses in 6 randomly selected states representing 6 different regions in the United States, 760 nurses responded (Miller, Alpert, & Cross, 2008); and 54% reported that they were obese or overweight. In Australia, there have been few studies that have looked at nurses and/or midwives and obesity. Zapka, Lemon, Magner, & Hale (2009) reported in their study that, out of 194 nurses from six hospitals

in Australia, 28% were classified as obese and 37% as overweight. Similarly, Zhao et al. (2011), also in Australia, reported a high prevalence rate of overweight status and obesity among nurses and midwives (N=2,494): 32% were overweight and 27% were obese. Together, these statistics suggest an increased or equal rate of overweight status or obesity among nurses compared to the general public. Ratner and Sawatzky (2009) used the 2003 Canadian Community Health Survey to compare the health status, preventive behavior, and risk factors of female nurses (N=1,769) with the referent group that consists of other employed postsecondary-educated women (N=15,747). They saw that the percentage of nurses identified as overweight or obese (43.9%) was significantly higher than the referent group (34.4%).

Being overweight or obese may be associated with nurses' motivation to provide counseling and education to their own patients about weight loss. In the survey study of 760 nurses (Miller, Alpert, & Cross, 2008), 54% self reported that they were obese or overweight; 53% of the nurses who were overweight or obese indicated that they were not motivated to make lifestyle changes. More than three out of four (76%) nurses reported that they had not brought up the topic of obesity with their patients.

In summary, obesity is a national public health concern. Available data suggest that obesity is a significant yet understudied problem among nurses. A review of existing evidence also underscores the need to investigate the influences of hospital environment and culture as well as individual behaviors for obesity control among nurses. Findings from such studies could be used as a basis for developing interventions to increase productivity and morale, decrease work-related disabilities, and improve the quality of life for nurses.

3. Diet

Healthy diet has been associated with reducing the risk of chronic illness such as coronary heart disease and cancer and helping in weight management (CDC, 2011). The Dietary Guidelines for Americans in 2010 recommend for adult males and females to consume at least 2 servings of fruits and 2-3 servings of vegetables on a daily basis to promote health in the general population (U.S. Department of Agriculture). In the United States, 32.5% and 26.3% of the population in 2009 consumed on a daily basis 2 servings of fruits and 3 servings of vegetables, respectively (MMWR, 2010). There are only a few studies that specifically examine nurses' dietary behavior, particularly focusing on their fruit and vegetable consumption. All of these studies document inadequate intake of fruits and vegetables among nurses, though in varying degrees. In England, Malik, Blake, and Batt (2011) examined the dietary behaviors of 325 nursing students and 551 nurses at a university teaching hospital in England. Less than half (40%) of the nurses and only 23% of the nursing students consumed 5 servings of fruits/vegetables every day. In another international study, Ratner and Sawatzky (2009) used data from the Canadian Community Health Survey to assess the health behaviors of nurses compared to other employed women. The survey sample included 1,769 female nurses and a comparison group of 15,747 female postsecondary graduates. Sixty percent of the nurses included in the national survey reported sufficient intake of vegetables and fruits compared to 50% of the other employed women. It is difficult to determine if there was any social desirability bias because of the nurses' education/training, however.

One of the challenges in reviewing previous studies on dietary behavior among nurses and other health professionals is the inconsistency or lack of clarity as to how the

dietary behavior outcome was defined. In the first study described above (Malik, Blake & Batt, 2011), healthy dietary behavior was defined as consuming 3 servings of fruits and 5 servings of vegetables. In the Canadian study (Ratner & Sawatzky, 2009), “sufficient intake of fruits and vegetables” was defined as consuming 5 servings for fruits and vegetables daily. Because of these methodological issues, direct comparison of dietary behavior across studies is difficult. Future research on nurses’ dietary behavior will need to address the issue by clearly defining the target behavior.

4. Physical Activity

Benefits of regular physical activity for health have been well-documented across multiple studies among a variety of populations. Not only does it reduce premature death, sudden heart attacks, and regular physical activity, it also decreases prevalence of coronary heart disease, stroke, some cancers, type 2 diabetes and depression as well as risk factors such as high blood pressure and high blood cholesterol (Shaw, Gennat, O’Rourke, & Del Mar, 2006; Orozco et al., 2008; Heiwe & Jacobson, 2011;). For adults, 150 minutes per week of moderate to intense physical activity is recommended to have a substantive health benefit. There are many barriers, however, to engaging in regular physical activity; and several studies have demonstrated that nurses often do not engage in physical activity during their leisure time.

In Canada, female nurses (N=1,769) and other employed postsecondary female graduates (N=15,747) were surveyed for their health behaviors; and, in both groups, nearly half (47%) reported that they were physically inactive (Ratner & Sawatzky, 2009). Ratner and Sawatzky (2009) defined physical inactivity as using less than 1.5kcal/kg/day of total daily energy in the past 3 months. In England, 55% of the nurses (N=551) were

partaking in physical activity or exercise most days of the week for at least 30 minutes (Malik, Blake, & Batt, 2011). In Lithuania, out of 748 hospital nurses who filled out a questionnaire, only 79 (10.6%) nurses reported exercising more than 30 minutes daily while 318 (42.5%) nurses reported exercising more than 30 minutes weekly (Malinauskiene, Leisyte, Romualdas, & Kirtiklyte, 2011). To assess physical activity, Malinauskiene et al. (2011) used only one question: “How often in leisure time you have been physically active, no less than 30 minutes in the way that your breathing becomes hard and sweat appears”. There were 7 possible answers that were later categorized into three responses of daily, weekly and less than weekly (Malinauskiene et al., 2011). As is the case for dietary behavior, each study used different definitions of “physical activity” making direct comparison across studies challenging.

D. Correlates of nurses’ health behavior

To our knowledge, there is no systematic research in which nurses’ health behaviors were examined in relationship with other potential correlates; as shown in the previous section, most studies of nurses simply addressed prevalence rates of healthy behaviors. Based on the theoretical framework of this study, Health Action Process Approach (HAPA), several correlates have been identified for their possible relationships with health behaviors among nurses. These include self-efficacy, intention and planning, and individual/sociodemographic characteristics. In the following section, each of these potential correlates of health behaviors among nurses is described in detail using the available literature targeting general (including both healthy and patient) populations.

1. Self-Efficacy

Self-efficacy refers to one's belief in the ability to do a specific behavior (Bandura, 1977). There are many studies looking at self-efficacy and health behaviors where self-efficacy plays a significant role in smoking cessation, pain management, and control of weight, healthy eating, physical activity, and adherence to preventive health programs. While the literature on the role of self-efficacy on nurses' health behaviors is limited, prior studies of general populations indicated that people with a greater sense of self-efficacy are more likely to adopt healthy behaviors and less likely to relapse into their unhealthy lifestyle (Bagozzi & Edwards, 1998; Gollwitzer & Oettingen, 1998).

In an integrative review, Park and Gaffey searched for studies conducted on cancer survivors that examined the relationships among psychosocial factors and health behavior change (such as exercise and dietary habits); and they found 30 studies that met their pre-determined criteria (2007). Among the studies, self-efficacy was found to be a powerful determinant in health behavior change along with social support (Park & Gaffey, 2007).

In a study of 182 student nurses and midwives at a university in southeastern England, Luszczynska and Haynes (2002) evaluated the influence of a planning intervention on nurses' fruit and vegetable intake, physical activity, and BMI. The results indicated that the "beliefs about their ability to overcome barriers" had a direct effect on health behaviors by increasing the fruit and vegetable intake and facilitating BMI reduction among respondents who were overweight or obese. The authors concluded that self-efficacy beliefs are crucial for health behavior change. In addition, self-efficacy was also tested to see if it had a moderating effect by using hierarchical regression analysis.

There was an increase in the explained variance of fruit and vegetable intake and physical activity indices as self-efficacy was added (2002).

Other studies have shown that self-efficacy has a moderating effect on the relationship between intention and behavior. Hence, if a person lacks self-efficacy, despite the planning, the intention does not translate into the desired behavior. This was confirmed in a study done on 411 employees in a logistics service company in Germany who was surveyed twice during a 4-week interval (Richert, Reuter, Wiedemann, Lippke, Ziegelmann, & Schwarzer, 2010). In the study, self-efficacy ($\beta = .86, p < .01$) was the most powerful predictor of fruit and vegetable intake, followed by past behavior ($\beta = .32, p < .01$) and the interaction of self-efficacy and planning ($\beta = .31, p < .01$). In total, the variables accounted for 51% of variance of fruit and vegetable consumption (2010). This study showed that individuals with low self-efficacy might not take advantage of planning to translate their intentions into behavior (Richert et al., 2010).

Similarly, self-efficacy may act as a moderator in the relationship between planning and the desired behavior. Using cluster randomization, Luszczynska, Schwarzer, Lippke & Mazurkiewicz (2011) recruited 58 total participants with diabetes (22 in the control group and 36 in the intervention group) for an intervention to enhance their physical activity levels by assisting in planning in-person. From the intervention group, the face-to-face planning intervention saw a moderate effect (Cohen's $d = 0.34$) from the level of physical activity at follow-up ($M = 4.36, SD = 1.53$) from baseline ($M = 3.83, SD = 1.63$) (2011). Again, using hierarchical regression analysis, self-efficacy was tested to see if there was a moderating effect. Then the interaction terms were decomposed to calculate the slopes of three different levels of the moderator (self-

efficacy). It was found that the people at the higher level of self-efficacy saw a benefit from the planned intervention to increase physical activity; whereas, the people at the low level of self-efficacy did not see any benefit of the planning to enhance their physical activity behavior (2011).

To summarize, self-efficacy is an important variable to measure in behavior change. The literature supports self-efficacy having a moderating effect for the relationships of intention, planning, and behavior (such as physical activity and healthy eating).

2. Intentions to healthy behavior

Intention to healthy behavior is a concept that has been used in a number of cognitively-based theoretical frameworks including HAPA and Theory of Reasoned Action. According to HAPA, intention is defined as someone having the intent to adopt a behavior or to change a risk behavior; and it is an antecedent of subsequent behavior (i.e., cause-effect). Webb and Sheeran (2006) performed a meta-analysis to examine the causal inferences between intention and behavior. Among 47 experimental studies that met the requirements, medium to large change in intention ($d=0.66$) led to a small to medium change in behavior ($d=0.36$), indicating that it takes a person with a large intention to actually see a little change in the behavior (Webb and Sheeran, 2006). In another meta-analysis of 23 studies, Adriaanse, Vinkers, de Ridder, Hox, and de Wit (2011) examined the effect sizes of intention for promoting increasing healthy eating vs. decreasing unhealthy eating. Intention had a stronger effect in promoting healthy eating than in diminishing unhealthy diet (Cohen's $d=.51$ versus $.29$, respectively).

Based on HAPA, intention indirectly mediates the relationship between self-efficacy and healthy behavior outcome. For example, Dishman et al. (2006) conducted a longitudinal cohort study with 443 girls who were recruited from 22 public high schools in South Carolina in the Lifestyle Education for Activity Program (LEAP). Data were collected at the end of 9th grade and 12th grade academic years; 243 girls in the intervention group and 200 girls in the control cohort completed the survey. Dishman et al. (2006) found that change in physical activity was directly associated with changes in intention, perceived behavioral control, and goal setting. Indirectly, it was associated with change in self-efficacy by pathways mediated through intention and goal setting (2006). Despite the high attrition rate (45%) and the possibility of recall bias, the Dishman et al. (2006) study supports intention strategies to promote healthy behavior.

Wiedemann, Schuz, Sniehotta, Scholz, and Schwarzer (2009) also found that those with strong intentions tended to engage in healthy behavior via planning, whereas those with low levels of intentions failed to engage in target behavior through planning. Wiedemann et al. sampled 124 participants from three cardiac rehabilitation centers (Study 1) and 209 participants from dental clinics (Study 2), all in Germany. Specifically, in Study 1, intention ($\beta=.32$, $p<.01$), action planning ($\beta=.22$, $p<.05$), and interaction of intention and planning ($\beta=.18$, $p<.05$) explained 19% of variance in physical activity (2009). In Study 2, 26% of the variance in dental hygiene was explained by planning ($\beta=.43$, $p<.01$), intentions ($\beta=.21$, $p<.01$), and interaction of intentions and planning ($\beta=.10$, $p<.01$) (2009). Both studies supported that the relationship between intentions and behavior was mediated by planning only if participants had at least certain levels of intentions (z-value of $-.22$ for physical activity, -1.86 for interdental hygiene). The studies

support that strong intenders are more likely to translate their intentions into target behavior through planning, which suggests different approaches to promote behavior change conditional upon a person's levels of intentions (Wiedemann et al., 2009).

In two studies conducted by Scholz, Nagy, Gohner, Luszczynska, and Kliegel (2009), change in behavior was strongly associated with volitional factors such as implementation intentions and action control. Each study was conducted with a sample of 469 respondents (women=82%, 18-79 years) (Study 1) and 441 respondents (women=52%, 13-66 years) (Study 2). In Study 1 (Scholz et al., 2009), participants were recruited from a web-based nutrition program. In the study, change in action planning ($\beta=.22$, $p=.04$) and control ($\beta=.34$, $p<.001$) were the powerful predictors of change to eating a low-fat diet. In total, 34% of the variance in change to eat healthy was accounted for by change in action control, action planning, and intentions. Study 2 participants consisted of undergraduate students and a panel of smokers from a university in Switzerland and of respondents who were invited to take the survey from different smoking-related web pages (Scholz et al., 2009). In Study 2, change in action control ($\beta=-.34$, $p<.001$) and change in self-efficacy ($\beta=-.23$, $p<.05$) were significant predictors of changes in smoking habits. The two studies yielded almost the same patterns: change in volitional factor, especially action control, was a strong predictor of change in target behavior. These studies demonstrate relying on intentions alone to predict target behavior might not be sufficient, and they underscore the importance of considering volitional factors (e.g., planning) along with intentions (Scholz et al., 2009).

3. Planning

In order to bridge the gap from intention to behavior change, volitional factors such as planning must be considered (Figure 2). Planning is often seen as a mediator with intention and the behavior change. For example, Richert, Reuter, Wiedemann, Lippke, Ziegelmann, and Schwarzer (2010) examined a sample of 411 employees in a logistics service company in Germany for their consumption of fruits and vegetables over a 4-week period. They found that planning had a full mediation effect of intention-behavior relation, which was moderated by self-efficacy at the second stage. Specifically, the interaction term between self-efficacy and planning ($\beta=.31$, $p<.01$) significantly predicted fruit and vegetable intake in the study sample; the strength of mediation increased with increasing levels of self-efficacy, however. In other words, planning was not beneficial for an individual who lacked self-efficacy in translating intention to fruit and vegetable consumption. The strengths of the mediation effect were particularly apparent among those with a value above 2.78 of 4 point self-efficacy scale (2010). This study showed that individuals with low self-efficacy might not take advantages of planning to translate their intentions into behavior (2010). Despite the limitations including a high attrition rate (53%) and the lack of generalization due to the use of a convenience sampling method, this study supports the role of self-efficacy (moderator) and planning (mediator) in explaining health behavior.

White, Terry, Troup, Rempel, and Norman (2010) agree that planning is a volitional or post-intentional construct for healthy eating. In their study, they had 184 adults diagnosed with diabetes and/or cardiovascular disease answer a questionnaire about eating foods low in saturated fat. They found that planning predicted directly the

consumption of foods low in saturated fat and also mediated the relationship between intention and behavior in eating foods low in saturated fats. This was confirmed in another study where 812 individuals were recruited to examine the moderating role of self-efficacy with a dependent variable of physical activity. Once again, it was noted that if a person lacks self-efficacy, planning will have no mediating effect between intention and outcome (Lippke, Wiedemann, Ziegelmann, Reuter, Schwarzer, 2009).

Additional evidence exists to indicate that planning is significantly associated with healthy dietary behavior. In order to test the predictive value of planning, van Osch et al. (2009) conducted two longitudinal observational studies simultaneously with a random sample of 572 adults in the Netherlands who completed a questionnaire regarding fruit consumption and 585 adults who completed a questionnaire regarding high-caloric snack consumption. The authors found that planning was a strong predictor of fruit consumption ($\beta=.13$, $p<.01$) and high-caloric snack restriction ($\beta=-.11$, $p<.05$), controlling for the motivational factors and baseline behavior, although past behavior ($\beta=.53-.64$, $p<.001$) was the most powerful predictor of the two target behaviors (Osch et al., 2009). In total, 61% of the variance in fruit consumption was explained by the regression model, whereas 39% of the variance of high-caloric snack consumption was predicted by the regression model. The study also demonstrated that the same action planning could be potentially used for both types of health protective and risk behaviors. Limitations include the low explained variance of high-caloric snack consumption (39%), which is not uncommon as a dietary behavior (Osch et al., 2009). Despite the limitations, this study supports that the application of planning potentially helps to diminish gaps between intention and behavior change (2009).

In an international setting, Cao, Lippke and Liu confirmed that the intention-behavior relation was mediated by planning (2011). This study was conducted with a stratified random sample of 534 adolescents from two high schools in China. The data were collected 4 weeks apart using self-reported questionnaires. Cao et al. (2011) found that planning ($\beta=.35$, $p<.05$) and past behavior ($\beta=.23$, $p<.05$) were significant predictors of physical activity change in the sample, and that the pathway from intention to physical activity was fully mediated by planning. In addition, intention, physical activity at baseline, and planning explained 24% of the variance in follow-up physical activity behavior.

Planning had a significant effect on improving exercise behavior. In a sample of 777 young adults from several universities in UK, Conner et al. found that planning had a partial mediation effect on the relationship between intention and exercise behavior, conditional upon the level of one's intention (Conner, Sandberg, & Norman, 2010). Conner et al. (2010) conducted another study in which they randomly assigned 356 participants to either questionnaires containing action planning or not. The authors confirmed that action planning was effective at promoting exercise behavior using two groups (no planning and planning group) and that this tendency became greater among strong intenders. Past behavior ($\beta=.43$, $p<.001$), intention ($\beta=.33$, $p<.001$), planning ($\beta=.15$, $p<.001$), and interaction of intention and planning ($\beta=.12$, $p<.001$) were significant predictors of exercise behavior, which accounted for 61% of the variance in the model (2010). Despite the short follow-up interval of two weeks, a threat to internal validity such as history, and sample coming from several universities in the UK, this

study supports that volitional factors and planning could play a key role in promoting healthy behavior as a mediator between intention and behavior.

To summarize, prior research suggests the critical mediating role of volitional factors (i.e., planning) in explaining the relationship between intention and health behavior. While most evidence is available for general public or for youth adults, there are limited studies targeting nurses.

4. Barriers

In addition to the aforementioned cognitive and social variables, specific factors in nurses' work environments may be associated with the adoption of health behaviors.

4a. Shift work

Hospitals require 24-hour nursing care for its patients which means around-the-clock shift work by the nursing staff. Wilson (2002) compiled a literature review of studies investigating the impact of shift work on nurses. It revealed that shift work plays a detrimental physiological and psychological role on nurses' health. There have been higher incidences of ulcers, depression and neurotic disorders identified among shift workers (Fossey, 1990, Hawkins, 1992). Shift nurses would often sacrifice sleep in order to fulfill the responsibilities at home such as child care. This impacted their work attitude as well as potentiated low self-esteem, anxiety, and irritability (Wilson, 2002).

A couple of studies examined an association between shift work and unhealthy weight among female nurses, though evidence is not unequivocal. Zhao, Bogossian, Song, and Turner (2011) recently reported findings on a secondary data analysis of a current longitudinal study called the Nurses and Midwives' e-Cohort Study that examined the health outcomes of nurses in Australia. Zhao et al (2011) included nurses

who met one of these two criteria: worked only day shift or worked only off shift (evening and/or night). Out of 7,604 nurses who completed the survey, 2,494 were female nurses or midwives whose ages ranged from 20 to 70 years (mean=42.8yrs±9.9). The day workers were older than the shift workers by 4 years (41.3 years versus 45.1 years, $P<0.0001$). In the analysis, nurses who worked other shifts beside day shift were 1.2 times more likely to be overweight or obese (2011). Zapka et al. (2009) conducted an intervention study among 194 nurses in Massachusetts. From the baseline survey, it was revealed that nurses who worked the 3rd shift or split shift and/or had BMI ≥ 30 were engaged in significantly less physical activity compared to nurses who worked day or 2nd shift and/or had BMI < 30 (2009).

Nurses who worked night shift or several weekends per month had higher prevalence of smoking than nurses who worked days or did not work weekends (Trinkoff & Storr 1998). Furthermore, Trinkoff & Storr saw that, among the 3,917 nurses who mailed in the anonymous questionnaire and met the criteria, the combination of night shift and working more than 8 hours placed nurses at the greatest risk of smoking. Van Amelsvoort, Jansen, and Kant (2006) followed 12,140 employees for two years and concluded that those who did shift work had a significant association with taking up smoking. Night nurses tended to have shorter sleep periods and increased use of substances such as alcohol and sleeping pills compared to day nurses (Wilson, 2002).

From the literature, nurses who worked the off shift hours and/or split shifts had higher incidences of obesity and smoking and engaged in less physical activity.

4b. Work-related stress

For nurses, work-related stress comes from workload, death and dying of patients, conflict with physicians, uncertainty about treatment, and conflict with fellow nurses. Work-related stress level was found to be a good predictor of poorer health ratings for nurses in a multi-state study conducted by Tucker, Harris, Pipe, and Steven (2010). In this study, 3,132 nurses answered an electronic survey and revealed that higher levels of perceived stress had a negative relationship with rating their general health as excellent.

Zapka et al. (2009) surveyed 194 nurses working at hospitals about their weight-related perception and lifestyle behaviors. It was reported that those who reported a stressful work environment tended to consume more calories; however, it was found that despite reporting being stressed at work, these nurses consumed more servings of fruits and vegetables than nurses who did not have stress at work or were unsure if they did (2009). In addition, physician recommendations to lose weight, self-perception of being overweight, higher education, and female sex were all positively associated with weight loss behavior (2009).

In a study by McKenna, Slater, McCance, Bunting, Spiers, and McElwee (2003), nurses in Ireland (N=1,074) reported “addiction” and “enjoyment” as the two highest reasons for smoking. “Work pressure” and to “deal with anxiety/depression” were the third and fourth reasons, respectively; and “to control weight” and “influence of friends/family” were the lowest scoring reasons (2003). Smoking was defined as having smoked 100 or more cigarettes in one’s lifetime, adopted from the World Health Organization. Hence, a nonsmoker has smoked less than 100 cigarettes in their lifetime, and a former smoker is someone who has smoked more than 100 cigarettes but no longer

smokes (2003). When this 2003 study was compared to a previous study in 1980, it was noted that the rating of work stress/pressure was a more common reason for smoking than in 1980 (2003). Also, it was noted that the 96.8% of current smokers and 55.5% of former smokers started smoking before they started nursing school; but they reported that they continue to smoke because of work pressure. This suggests that work-related stress may play a role in nurses engaging in this risky behavior.

Similarly, Nakata, Swanson, and Caruso (2010) examined the literature and found that work stress, poor work environment, shift work, and peer influence were major risk factors influencing nurses' smoking behaviors. Using a grounded theory approach, Radsma and Bottorff (2009) interviewed 23 nurses who smoked to describe how they managed the contradictions encountered when caring for tobacco-dependent patients. Nurses counteracted ambivalence in one of the following four ways: indifferent, evasive, engaged, and forced compliance with smoking policies. Nurses' approaches were influenced by their perceptions of patients' need for tobacco-dependence interventions and perceptions of their own vulnerability in addressing tobacco use.

The Nurses' Health Study (NHS) is one of the largest studies designed at the national level to follow nurses regarding their medical history, health behaviors, and oral contraceptive use via mailed questionnaires. NHS initially recruited 121,700 married female nurses (98% were white) in 1976 and followed up every 2 years with a questionnaire. Starting in 1982, mental health and stress questions were added to NHS; and, for this study (N=94,110), it was found that women/nurses in a high-stress category had a fivefold increase in risk of suicide if both work stress and home stress were combined (Feskanich, Hastrup, Marshall, Colditz, Stampfer, Willett, & Kawachi, 2002).

To counter the work stress, researchers have shown that social support decreases occurrences of high stress (Piko, 1999, AbuAlrub 2004).

5. Resources

5a. Social Support

Social support is inclusive of various support systems that provide assistance and encouragement to an individual so that he or she may be able to better cope (Maslach et al. 2000). Often times, the social support comes in forms of social relationships and transactions (with friends, family, co-workers, or supervisors) where the individual may assess the supportiveness (Sarason, Levine, Basham & Sarason, 1983; Maslach et al., 2000).

There are several theories on social support and its relationship with stress. Social support may either be activated by the stress an individual is coping with (Cooper, Clarke & Rowbottom, 2001); or the social support may protect the individual by reducing the intensity of the stressors (Cooper et al., 2001; Albar Marin & Garcia-Ramirez 2005; Maslach et al. 2000). In the mid 1970s, two epidemiologists wrote independently how social support acts to “buffer” any negative impact that aging, illness, bereavement or other events may have on the stress of a person’s health (Cassel, 1976; Cobb, 1976). This spun more research on social integration, individual’s social contact, and mortality. House, Umberson and Landis (1988) found a significant link between fewer social contacts and increased risk of mortality. Subsequently, more research was done on social support and its negative correlation with stress, including work-related stress (Cooper et al, 2001).

Indeed, several decades of research on social support confirm that social support is a good predictor of health-related behaviors and practices (Holt-Lunstad, Smith & Layton, 2010; Uchino, 2006). McDonald et al. (2002) reported that social support was a predictor of health promoting behaviors (i.e., physical activity, nutrition, and stress management) among adults with diabetes. In another study with middle-aged adults, a significant correlation was detected between social support and positive health practices (McNicholas, 2002). Likewise, social support, especially when interacting with personality characteristics (i.e., hardiness), predicted biological outcomes such as lowered blood pressure in a number of studies (Angerer et al, 2000; Knox et al., 2000; Ong and Allaire 2005; Westmaas and Jamner 2006; Ratnasingam and Bishop 2007; Uchino, 2009). Social support can be considered to have a protective and/or a direct impact on employed workers (i.e. nurses) (Rose et al., 2006; Browner, Ellis, Ford, Silsby & Yee, 1987; Harris & Rose, 2002; LaRocco, House & French, 1980).

Such protective social support would be needed for nurses who work in the hospital and are exposed to various stressors including mandatory shift work, conflicts with physicians, and dealing with death (Albar Marin & Garcia-Ramirez 2005; Maslach Schaufeli & Leiter, 2001). In addition to the obligation at the workplace, nurses' obligations to their families may also affect their stress levels (Parikh, Taukari, Bhattacharya, 2004). To deal with these kinds of stress, social support was the most frequently used resource by 447 mental health nurses (Kippling, 1998). Numerous studies have found a significant correlation between social support from supervisors, co-workers, friends, and family and stress/burnout (Baruch-Feldman, Brondolo, Ben-Dayana & Schwarz, 2002; Carlson & Perrewe, 1999; Schaufeli & Greenglass, 2001).

For example, nurses who perceived social support from co-workers had less perceived job-related stress (AbuAlrub 2004). In fact, an enhanced level of job performance was reported by the 303 nurses taking an internet survey (2004). Nurses may receive social support from colleagues and/or family. According to Halbesleben & Buckley (2004), both sources of support reduce stress/burnout among nurses; and, it may elicit “instrumental support” that may come from work-related social support and “emotional support” that may come from the family-related social support, respectively.

The three features of burnout as defined by Maslach include emotional exhaustion, depersonalization, and personal accomplishment (Schaufeli, Maslach, Marek, 1993; Maslach et al., 2001); and social support may have different relationships. Leiter and Maslach (1988) found that social support from colleagues and supervisors showed a positive effect on nurses’ personal accomplishments. Inversely, lower emotional exhaustion and lower depersonalization was associated with receiving social support from colleagues and supervisors (1988). Also, positive social support has been linked with an increase in job satisfaction, and thus, reducing work-related stress (Stewart & Arklie, 1994). Social support from family and friends is also an important source for nurses to deal with work-related stress (Beaver, Sharp & Cotsonis, 1986). Demir, Ulusoy, and Ulusoy (2003) suggested that social support from the family is important because of its association with lower emotional exhaustion and higher personal accomplishment in nurses. The highest level of personal accomplishment was found among nurses who received support directly from their spouse or child (Parikh et al, 2004).

In summary, many studies have shown social support as a predictor for healthy behaviors. Nurses who receive social support have a better physical and mental well-

being. Social support is an important resource for nurses when it comes to reducing their work-related stress.

5b. Hardiness

Hardiness is a concept that was explored by Kobasa (1979) to understand differences between persons with a high degree of stress who do not become sick and persons with a high degree of stress who do become sick. Kobasa was able to identify a personality structure that was called hardiness that assists a person in countering the negative forces of a stressful situation. There are three major characteristics associated with hardiness: control, commitment, and challenge (Kobasa, Maddi, & Kahn, 1982). A person with hardiness will attempt to be in “control” over the outcomes, to have “commitment” to oneself and to work, and to accept that the “challenge” to change may be beneficial as an opportunity to grow instead of being perceived as a threat (Bigbee, 1985, Turnipseed, 1999).

Kobasa, Maddi, Puccetti, and Zola examined personality hardiness, exercise, and social support as possible “resistance resources” to illness (1985). There was no relationship seen between hardiness and exercise, nor was there any relationship seen between exercise and social support. However, there was a significant correlation of 0.23 ($p < 0.05$) with hardiness and social support (Kobasa et al, 1985). In this prospective study with business men, the 70 men at one year follow-up showed that having one of the three resistance resources was associated with lower illness probability than having none of the resistance resources. Furthermore, having two of the three resistance resources was associated with lower illness probability than having just one of the resistance resources. From a regression analysis of the three resistance resources, hardiness alone explained

33% of the variance in subsequent illness (after one year) and over 75% of all variance explained. Social support and exercise were significant parameters; but they explained roughly 6% and 4% of the variance in the subsequent illness. Hence, hardiness was the most important of the three resistance resources (1985).

Among nurses, available studies have shown that the presence of hardiness decreases burnout, increases commitment to their work, and decreases likelihood of resigning (Larrabee et al, 2003; Boyle, Grap, Younger, & Thornby 1991). Similarly, hardiness was examined among nursing students during their 2nd year of critical care (Costantini, Solano, Di Napoli, & Bosco, 1997). The study found that there was an association between higher levels of hardiness measured at the beginning of the year and lower levels of emotional exhaustion and higher personal achievement measured at the end of the year (1997). Once again, among 1,505 nurses who worked 2 or 3 rotating shifts, hardiness was one of the personality traits examined against insomnia, sleepiness, depression, and anxiety (Natvik et al., 2011). Not surprisingly, hardiness was significantly negatively associated with the dependent variables (insomnia, sleepiness, depression, and anxiety) (2011). In summary, while the research on hardiness among nurses is limited, existing evidence supports the role of hardiness as a protective factor against nurses' work stress and burnout and adverse mental health outcomes.

E. Conclusion

In summary, a comprehensive review of the literature has been provided in this chapter to provide a more in-depth understanding as to nurses' health behaviors and correlates of their health behaviors. While studies on nurses' health behavior are generally limited in terms of the number of studies and the scope (often focusing on one

health behavior rather than several key health behaviors that are critical to prevent common chronic diseases), available data indicate that nurses often fail to live up to the healthy behavior standards they expect of their patients. Previous findings on correlates of nurses' health behaviors are also inconsistent. Together, these studies support the need for a well-designed systematic investigation based on a valid theoretical framework to examine nurses' health behaviors and critical constructs that are linked to their health behaviors.

CHAPTER 3: METHODOLOGY

A. Introduction

The previous chapter provided a review of current literature regarding the health promoting behaviors of nurses and the variables in the Health Action Plan model including barriers (i.e. work-related stress, shift work), resources (i.e. social support, hardiness), self-efficacy, planning, and intention. This chapter details the research methods used during this study including the study design, setting and sample, procedures for data collection, plan for data management and analysis, and plan for human subject protection. A summary of the key details of the research methodology concludes the chapter.

The purpose of the mixed-methods study was to gain a better understanding of nurses' health promoting behaviors. The prevalence of key health promoting behaviors in preventing chronic illness was assessed. In addition, this study explored the barriers and facilitators of nurses engaging in health promoting behaviors guided by the Health Action Process Approach. Specifically, this study

1. Identified the prevalence of health promoting behaviors among nurses. In this study, health promoting behaviors include the following: engaging in 30 minutes of exercise 5 days a week; maintaining BMI within a healthy range; consuming at least 5 servings of fruits and vegetables; and quitting smoking or never smoking.
2. Examined the factors influencing nurses' adoption of the target health promoting behaviors.

3. Explored expectations and cultural norms associated with engaging in health promoting behaviors among nurses.

B. Research Design

This study employed a sequential explanatory design, a mixed-methods approach, using cross-sectional correlational survey for the quantitative element and focus group for the qualitative component in order to address main Aims #1 & 2 and Aims #3, respectively. The quantitative analyses examined the factors influencing nurses' adoption of health promoting behaviors while the qualitative analyses provided additional understanding of the expectations associated with engaging in health promoting behaviors and eliciting cultural idioms from the nurses' own perspectives. For the quantitative analyses, the independent variables in the study were self-efficacy, risk perception, intention, planning, social support, hardiness, work-related stress, and shift work. The 4 dependent variables were engaging in 30 min of exercise 5 days a week, maintaining Body Mass Index (BMI) within healthy range, consuming at least 5 servings of fruits and vegetables daily, and having quit smoking or never having smoked.

Sequential explanatory design is considered to be the most straightforward to implement among the different types of mixed-methods designs (Creswell & Clark 2007). The two different methods, quantitative and qualitative, are conducted at separate times making it easier for the single researcher to oversee both data collections. For this study, quantitative data was first collected and analyzed, and then subsequently the qualitative data was collected and analyzed in two consecutive phases. Sequential explanatory design may take a longer time, but the benefits are that the quantitative data are used to guide the questions for the focus group to further understand the phenomena

found from the quantitative findings. This design allowed the researcher the opportunity to establish qualitative and quantitative priorities during the data collection and analysis process (Collins, Onwuegbuzie, & Jiao, 2006). One purpose for combining two methods is to allow the findings of qualitative data analysis to inform the interpretation of quantitative results (Collins & O'Cathain, 2009), and vice versa. The synergism present in a mixed-methods study provides greater depth and value than the quantitative or qualitative components alone. It is hoped that a mixed-method design can provide more richness than either quantitative or qualitative methods alone might provide and increase the validity of the results of the study (Polit & Beck, 2008; Tashakkori & Teddlie, 2003).

C. Study Population

The population for this study includes full-time and part-time nurses employed at Johns Hopkins Hospital. Currently, the Human Resource department at Johns Hopkins Hospital reports that there are 2,134 full-time registered nurses and 485 part-time nurses employed (U.S. News, 2013). Nurses employed at Johns Hopkins Hospital have a combination of Associate Degree in Nursing (ADN), Bachelors Degree in Nursing (BSN), and Masters of Science in Nursing (MSN) prepared nurses. The units in the hospital have 7-32%, 64-95%, and 6-8% ADN, BSN, and MSN nurses, respectively, calculated from Johns Hopkins Nursing website (Johns Hopkins Medicine).

D. Sample Recruitment and Enrollment

1. Sampling

This study used a convenience sampling, a form of non-probability sampling. According to Creswell (2009), using non-probability convenience sampling allows the researcher to select participants who are available to voluntarily participate in research.

The convenience-sampling method has an advantage in that the researcher is able to obtain more observations for the study in a shorter period of time (Cozby, 2009).

2. Inclusion/exclusion criteria

Participants met the following inclusion criteria:

1. Current employment at the Johns Hopkins Hospital
2. Registered nurse licensure

Individuals with the following characteristics were excluded from the study:

1. Nurse administrators or nursing educators
2. Agency nurses

3. Sample size determination

Sample size should be determined before a study is conducted, but there is no one single formula to calculate sample size (Burns & Grove, 2005). In the literature there are several studies that have been done on effects of planning, intention and self-efficacy on health promoting behaviors among nurses. In particular, Luszczynska and Haynes examined the moderating effects of self-efficacy on fruit and vegetable consumption, physical exercise, and BMI in 182 nursing students and midwives (2009). Self-efficacy had a medium effect on fruit and vegetable consumption (Cohen's $d=0.26$), physical activity (Cohen's $d=0.30$), and BMI (Cohen's $d=0.40$) (2009). Using the observed effect sizes in Luszczynska and Haynes study (2009), Table 2 presents required sample sizes for the study at the power levels of 0.80, 0.85, and 0.90 with probability level of 0.05.

Table 2. Sample size

		Power		
		0.8	0.85	0.9
Effect size	Fruit/Vegetables Cohen's d=.26	234	267	312
	Physical Activity Cohen's d=.30	176	201	235
	BMI Cohen's d=.40	100	114	133

Based on the minimal acceptable power of 0.80 we needed 234 participants to see the smallest effect (Cohen's $d=.26$) seen in Luszczynska and Haynes' study or 100 participants to see a medium effect (Cohen's $d=.40$). With the final $N=21$, this study saw a medium effect size between Cohen's $d=.26$ and $d=.30$.

4. Response rate

This study used multiple methods of outreach to administer a web-based survey in order to increase the response rate (Dillman, 2007). The study was advertised at Johns Hopkins Hospital (JHH) with several different methods of outreach including emails sent to the staff from their managers with a support letter from the Vice President (VP) of nursing at JHH and personal delivery of flyers to each unit at JHH. Detail of each outreach is explained below under procedures. A response rate of 9.7% was needed to achieve a sample size of 255 with the assumption that all 2,619 nurses were outreached. If more than 50% of the employed nurses (1,310) received an e-mail and/or the flyer, then a response rate of 19.5% was needed.

Among health care professionals, it has been shown that mixed mode produce higher response rates (Braithwaite, Emery, De, & Sutton, 2003; Beebe, Locke, III,

Barnes, Davern, & Anderson, 2007; Lusk, Ceclos, Burau, Drawhorn & Aday, 2007; Schaefer & Dillman, 1998). In a previous investigation of hospital workers at the same target hospital, the mixed mode yielded a response rate of 26% (Sylvia, 2012).

E. Procedures

1. Survey Data Collection

1a. Study permission

An expedited review by the Johns Hopkins Medicine Institutional Review Board (JHMI e-IRB) was conducted (JHMI e-IRB# NA_00076097) and an approval (Appendix A) for de-identified survey data collection was received prior to beginning any study implementation.

1b. Consent

All parts of the consent as required by the Department of Health and Human Services (www.hhs.gov) were written out on the web-based survey (Appendix B) before proceeding to the first question. At the end of the consent, we included the verbiage required by JHMIRB that the participant's completion of the survey serves as consent to the research study.

1c. Survey administration

After the web-based survey was created and approved by the JHMIRB, efforts were made to use the Dillman's (2007) multi-faceted approaches to increase survey response rates. Specifically, the PI met with the Director of Human Resources at JHH and the Directors of Nursing (DONs) to strategize as to how to best outreach to the nurses. The Vice President of Nursing sent a signed letter in support of the study to the DONs via email (Appendix C), encouraging the DON to share it with the managers of each unit

who then forwarded the email to the staff in their unit. The Director of Nursing Research at the Johns Hopkins Hospital was instrumental in assisting the PI to obtain support from all the key leaders including the VP of Nursing and all of the DONs and to provide an opportunity to make a presentation in front of the nursing leaders at JHH (including nurse managers and supervisors). At the leaders meeting, the study purpose, background, specific aims, inclusion and exclusion criteria, and the incentives were made known.

In addition to the emails from the leaders of nursing departments, the PI went out to nursing units, mostly during the nighttime to hand out JHMIIRB approved flyers (Appendix D) explaining the research study and how to access the web-based survey. In a period of two weeks, 47 units were visited and the flyers were distributed into the mailboxes of the nurses after receiving permission from the charge nurses on that day or night. Additionally, the PI sought out fellow nursing colleagues who worked on other units to encourage their co-workers to participate in this research study.

1d. Survey data collection

An online survey was created by using Qualtrics, web-based survey software that may only be accessed by going to the Johns Hopkins Enterprise Authentication page and entering their JHED account. It was then pilot-tested among nursing students, nurses, and faculty for feasibility of the web-based survey. Interested nurses were asked to access the secured online survey through a link (shared on the flyer or in the e-mails) that was available for 40 days. It took the participants ranging from 10 minutes to 45 minutes to complete the web-based survey. Within the forty days, 254 surveys were initiated; and 236 were completed. Survey completers were given an option to leave their names and the best contact information to enter their names into a drawing of prizes which included

two I-Pads, two Kindle Fires, and four Kindle e-readers. Using random numbers, a total of eight winners were selected from 195 participants who expressed interest in entering the drawing. One participant, who was initially selected, did not respond over one-week even after multiple attempts. Consequently, a 9th person was chosen to receive the last prize.

2. Focus Groups

2a. Study permission

An expedited review by the Johns Hopkins Medicine Institutional Review Board was conducted (JHMI eIRB # NA_00081995), and an approval (Appendix E) for the focus group procedures was received prior to the qualitative study implementation.

2b. Focus group sample selection

From the survey respondents who selected “yes” to the question, “Do you agree to be contacted for a focus group,” a list was compiled with a total of 110 participants’ names along with their contact information, an email address, phone number, or both. A promise was made to the web-based survey respondents that their names will be deleted from their responses to the web-based survey. For this reason, demographic information was asked again for focus group participants.

2b. Focus group procedures

Initially, the application Doodle[®] was used to recruit participants for the focus group. Using the JHMI e-IRB approved e-mail script for invitation to participate in the focus group (Appendix F), a request to the 94 nurses who provided their email addresses was made via Doodle[®] to find out the best day and time for the focus groups. However only 4 nurses replied back via Doodle[®]; and instead of indicating all their availability,

they only selected one option that they would like to attend. Due to the low response rate of 4.3% when using the Doodle[®], an e-mail was sent out from the school computer and the participant's e-mail addresses were blind cc'ed. In the e-mail, only two options were given on different days of the week and at different times of the day so that the participants may choose a time that was convenient to them. There were 18 who initially replied for a 19% response rate. However, six of the replied e-mails indicated that they were not available for the date and time that were offered; and one of the nurses stated that she could not stay for the entire focus group. The remaining 12 nurses were divided into the two dates. Seven scheduled for focus group #1, and five scheduled for focus group #2. A reply was made to each participant to confirm the date and location. Unfortunately, within the week before the first focus group, 2 of the participants could not attend because of family emergency and sudden meeting at work; and the second focus group had one cancellation for similar reasons. Although five out of seven were scheduled for focus group #1, one participant was a no-show; and so, the first focus group was conducted with four participants. Focus group #2 had a last minute cancellation and so four out of the five participants scheduled confirmed their attendance. Due to miscommunication, one of the participants went to a different location; and so, the focus group #2 was conducted with three participants.

After meeting with the research team, a decision was made to conduct two more focus groups. Once again, outreach was made through the e-mail system. A personal email was sent to the eight nurses who were not available for the first two focus group times or cancelled at the last minute. Out of the eight emails sent, one was no longer interested; three were still not available. Two never replied back; and two were available.

From the remaining 76 nurses who were sent a mass e-mail, six replied back. One of the replies came from a male nurse, and every effort was made to accommodate his schedule. Unfortunately, at the end, he had to cancel because he could not make it after all. Two additional focus groups were conducted. One of the focus groups was held at 8 a.m. to accommodate nurses who worked the night before. There were again four total participants in focus group #3 and three total participants in focus group #4.

All four of the focus groups were held at Johns Hopkins Hospital to accommodate the participants, especially those who came off a shift. All four focus groups met at a conference room with a closed door and healthy refreshments including water, bananas, and nuts were provided.

At the beginning of each focus group, the JHMI e-IRB approved consent forms (Appendix G) were handed out and explained in detail including the taping of the focus group session. The participants were asked to select a nickname of a nurse theorist (i.e., “Flo” for Florence Nightingale) from a list provided by the researcher (Appendix H) so that the name of a nursing theorist was used only once. The nicknames were printed on a separate piece of paper for the participants to place in front of them. They were instructed to call out their pseudo-names before they answered any questions. A one-page information sheet was handed out to collect the participants’ demographic information (Appendix I). It was emphasized that the recording would include their pseudo-names and then was destroyed after the recording was transcribed. Also, it was explained that the focus group is voluntary and that they may leave at any time. The note-taker was introduced, and her role was explained to take hand-written notes and observations during the discussion, which served as a “back-up” in case something happened with the

recording equipment. After collecting both the information sheet and the consent form, the recording of the focus group began. Each focus group was led by the PI who has eight years of research experience (including running focus groups) as a trained research assistant. At the end of the focus group, a payment of fifty dollars was made to each participant for their time.

2c. Focus group guidelines

Discussion guidelines (Appendix J) were created and approved by the JHMI e-IRB to provide an outline of the topics and issues to be explored. The guideline questions were edited after each focus group was complete, except for the 4th focus group, with the assistance from the research team to reassess if any questions needed to be reworded and/or more questions were needed to explain the results from the quantitative analysis.

F. Operational Definition of Variables

For this study, the specific aims #1 & 2 were investigated by administering the cross-sectional correlational survey that asked for basic demographic questions and used specific subscales. The psychometric information for the subscales is summarized in Table 3. The study variables are operationalized as described below.

1. Sample Characteristics

Demographic variables collected in Appendix K included age, gender, race, marital status, shift worked, nursing education, nursing experience, height, weight, income comfort level, and co-morbidity. Age (years), height (feet, inches), and weight (pounds) were reported as ratio data. Nursing experience and nursing education level were collected as ordinal data while race, marital status, and shift worked were collected as categorical data. Income comfort level was reported as interval data with possible

options ranging from “very uncomfortable” to “comfortable.” Co-morbidity was collected as binary (yes/no) data, asking if they had health problems with heart disease, high blood pressure, lung disease, diabetes, ulcer or stomach disease, kidney disease, liver disease, anemia or other blood diseases, cancer, depression, osteoarthritis/degenerative arthritis, back pain, rheumatoid arthritis, and/or other medical problems.

2. Self-Efficacy

Self-efficacy is measured by the Schwarzer and Jerusalem’s General Perceived Self Efficacy Scale (GSE; 1995). It has 10 items that are rated on a 4-point scale (1= “Not at all true” to 4 = “Exactly true”). In Appendix K, sample items for the self-efficacy scale include, “I can always manage to solve difficult problems if I try hard enough” and “It is easy for me to stick to my aims and accomplish my goals.” This scale was originally developed in German but has been translated into 28 different languages. The internal consistency ranged from 0.75 to 0.91 among the different samples and countries (Schwarzer & Jerusalem, 1995). The GSE has been used in studies conducted among nursing students in Poland looking at their health behaviors (Zalewska-Puchała, Majda, Gałuszka, & Kolonko 2007) and also in longitudinal studies in Germany and Poland on adopting and maintaining health behaviors such as dental flossing, seat belt use, dietary behavior, and physical activity (Schwarzer, Schuz, Ziegelmann, Lippke, Luszczynska, Scholz, 2007). In this study, the Cronbach’s Alpha Based on Standardized Items (N=228) came out to be 0.88 for the GSE.

3. Intention

The concept of intention to engage in a health behavior is measured by the

Health Behavior Intention Scale (HBIS). The HBIS was developed by Renner and Schwarzer (2005) and includes 10 items (e.g., “I intend to live a healthier life”). The questions as viewed in Appendix K are rated on a 7-point Likert scale from 1 (*do not intend at all*) to 7 (*strongly intend*). The total score for the intention variable can range from 10 to 70, with higher scores indicating higher levels of intention to engage in a health behavior. Renner and Schwarzer (2005) reported an internal consistency reliability coefficient of .65 (Cronbach’s alpha) in a sample of 1,782 healthy men and women between 14 and 87 years of age. In this study, the reliability of the HBIS was higher with a Cronbach’s Alpha Based on Standardized Items of .80 (N=228).

4. Planning

Planning is assessed by asking if the participant is engaged in non-smoking, eating 5 servings of fruits and vegetables, maintaining a healthy weight; and/or increasing physical activity (Appendix K). If not, the question was asked if “they precisely have a plan of when, where, and how” to engage in each of the four health promoting behaviors (Wiedemann et al, 2009). These items were used by Wiedeman et al. (2009) on online participants (N=494) regarding whether they had a plan for eating five servings of fruits or vegetables daily. The internal reliability had an index of Cronbach’s alpha = 0.88.

5. Work-Related Stress

The work-related stress experienced by nurses is measured by the Nursing Stress Scale (NSS). The NSS developed by Gray-Toft & Anderson (1981) has 34 items and measures specifically job-related stressors for nurses (Appendix K). NSS may be further divided into 5 subscales measuring workload, death and dying, uncertainty concerning treatment, conflict with physicians, and conflict with other nurses. The NSS uses a 4

point Likert-scale (0=never, 1=occasionally, 2= frequently, 3=very frequently). Total scores of NSS range from 0-72; higher scores represent higher levels of work-related stress (1981). Gray-Toft & Anderson reported a coefficient of 0.89 for its internal consistency (1981). In this study, the NSS had a Cronbach's Alpha Based on Standardized Items (N=228) of 0.94.

6. Resources

Resources in the modified HAPA framework used in this study include two relevant concepts: social support and hardiness. These concepts were measured as follows:

6a. Social support

Social support may come from multiple sources; and so for this study, the Social Support Scale (SSS) (Appendix K) was used. The SSS was developed by House and Wells (1978), and the scale measures social support from diverse sources including the immediate supervisor, coworkers, spouse/partner, and friends/relatives. The first items refer to all four sources while the third item addresses the two work-related sources. The last item has three statements referring to the supervisor. The first 3 items use a 4-point Likert response scale (0 = not at all, 1 = a little, 2 = somewhat, 3 = very much); and the last item uses a different 4-point Likert scale (0=not at all true, 1=a little true, 2=somewhat true, 3=very much true) (1978). Higher scores reflect higher levels of perceived social support. In a study conducted by Jenkins & Elliott on 93 mental health nurses, there was a reliability coefficient of 0.84 (2004). In this study, the Cronbach's Alpha Based on Standardized Items (N=228) for SSS came out to be 0.76.

6b. Hardiness

To capture the concept of hardiness, this study used the short 15-item version of the Hardiness Scale (HS) (Bartone, 2007). The HS uses a 4-point Likert scale to measure dispositional resilience (Appendix K). The HS consists of three subscales: commitment, control, and challenge. Higher values obtained from the scale is associated with higher levels of hardiness. The HS has shown good internal consistency ($\alpha=0.82$). Bartone argues that, since this scale has relatively few items, it is best to use the test-retest reliability instead of Cronbach's alpha coefficient. Among 104 military students at West Point, HS had a test-retest coefficient of 0.78 (Bartone, 2007). The original 45-item Hardiness Scale was tested on 164 disaster relief workers. The subscales had good reliability as seen by the internal consistency coefficient ranging from 0.62 to 0.82. The Cronbach's alpha was 0.85 for the overall measure (Bartone, Ursano, Wright & Ingraham, 1989). In this study, the HS had a Cronbach's Alpha Based on Standardized Items (N=228) of 0.77.

Table 3. Psychometric Study Instruments Psychometric

Variable	Instrument	Items	Reliability
Self-Efficacy	General Perceived Self-Efficacy (Schwarzer & Jerusalem, 1995)	10 (Likert: 1-4) Score [10-40]	$\alpha = .75$ to $.91$ $\alpha = .88^*$
Intention	Health Behavior Intention Scale (Renner & Schwarzer, 2005)	10 (Likert:1-7) Score [10-70]	$\alpha = .65$ $\alpha = .80$
Social Support	Social Support Scale (House and Wells , 1978)	4 (Likert: 0-3) Score [0-12]	$\alpha = .84$ $\alpha = .76$
Hardiness	Short Hardiness Scale (Bartone, 2007)	15 (Likert: 0-3) Score [0-45]	$\alpha = .85$ $\alpha = .77$
Work-Related Stress	Nursing Stress Scale (Gray-Toft & Anderson, 1981)	34 (Likert: 0-3) Score [0-72]	$\alpha = .81$ $\alpha = .94$

* Represents the Cronbach's Alpha Based on Standardized items for this study (N=228)

7. Outcomes variables

Smoking was reported as nominal data categorized as nonsmoker, current smoker, or former smoker. Study questions included, “are you currently smoking?”, “have you ever smoked?”, and “how long have you quit?” If they quit less than 2 years ago, they were considered a current smoker.

Maintaining healthy weight was assessed by calculating the BMI using height and weight obtained from the demographics/individual characteristics data. The National Heart, Lung, and Blood Institute established obesity guidelines (1998); and it defines BMI [<18.5] as underweight, [18.5- 25.0] as normal weight, [25.0- 30.0] as overweight, [30.0- 35.0] as class I obesity, [35.0- 40.0] as class II obesity, and [≥ 40.0] as class III obesity. For this study, BMI is categorized as ordinal data using the [<18.5] underweight, [18.5- 25.0] normal weight, [25.0- 30.0] overweight, and [≥ 30.0] obese.

By utilizing the Health Promoting Lifestyle Profile (HPLP II) (Walker, 1987), we were able to derive if the participants were engaging in the recommended physical activity and eating the recommended servings of fruits and vegetables. An open permission is given by Dr. Walker to use HPLP II for research purposes as found on http://www.unmc.edu/nursing/docs/HPLPII_Background_and_Permission_for_Use.pdf. HPLP II consists of 52 items using a 4-item Likert scale to measure six dimensions including physical activity, nutrition, interpersonal relations, health responsibility, spiritual growth, and stress management. The total scale and subscale are reported as means so that one can compare the scales despite the different number of total questions. To assess the reliability of the HPLP II, a sample of 712 adults with ages ranging from 18 years to 92 years were administered the questions. For each subscale, the alpha

coefficients ranged from 0.79 to 0.87 (Walker, Sechrist & Pender, 1987; Walker & Hill-Polerecky, 1996). For this study, subscales measuring physical activity (8 items) and nutrition (9 items) were used. Possible scores for these subscales range from 8-32 or 9-36, respectively. For this study, however, we chose not to tally a score but, instead, take the questions that specifically asked if they were consuming at least 3-5 servings of vegetables, consuming 2-4 servings of fruits, and moderately exercising 30 minutes a day for at least 5 days a week or .

G. Analysis Plan by Aims

For this study, there were 236 completed surveys from the 254 surveys that were initiated. After running some descriptive analysis, three did not meet the inclusion criteria and one took the survey twice. Per exclusion criteria, cases that provided their job title in a role of an administrator (i.e. director or manager) were deleted. Two cases provided the same email address for the prize drawing although they took it at different times. Upon further investigation, comparing the answers to the other questions, it appeared that the same person took the survey twice. Instead of deleting both cases, the case filled out the first time was kept and the case filled out the second time was deleted. In addition, in the demographic questionnaire section, a decision was made to consider any answer options of “decline to answer” as a missing value. For the demographic analysis, total of 232 cases were used.

Decisions were made a priori to delete cases with subscales that had missing values that accounted for 20% or greater of the total items. If the subscale had less than 20%, then the missing values were imputed by entering in the mean of that item for the subscale. A total of 4 cases had missing data (> 20% of total item missing from the

subscale) and once those cases were deleted, a total of 228 were remained for the final data analysis.

Data was analyzed using the version 21 of the Statistical Package for the Social Sciences (SPSS) (2012) which is statistical software for Windows. Descriptive statistics are used to report all demographic variables and to obtain the prevalence in percentages of nurses engaging in key health promoting behaviors. In order to test the relationships between individual characteristics and the target health promoting behaviors, t-tests, chi-squares, and correlations were used. In addition, a series of multiple logistical regression analyses were employed to identify significant correlates of the four health promoting behaviors investigated in this study, after controlling for individual characteristics.

Out of the 232 participants, we had 110 who agreed to be contacted to be part of a focus group. In order to analyze focus group data, the emerging themes were identified using the thematic coding method. To ensure the validity and reliability of the findings, themes were further categorized and validated with ongoing analysis and agreement from a research team.

Aim 1. Identify the prevalence of health promoting behaviors among nurses.

Descriptive statistics were used to report all individual characteristics. In this study, health promoting behaviors included the following: engaging in 30 minutes of exercise 5 days a week; maintaining BMI within healthy range; consuming at least 5 servings of fruits and vegetables; and quitting smoking or never smoking. Few assumptions were made when reporting in how many of the health promoting behaviors nurses were engaged. For any nurse who did not provide height and/or weight (8 participants), we decided to be conservative and treat those participants as not

maintaining a healthy weight. As for the smoking status, any nurses who identified themselves as having smoked but did not indicate if they had quit, we assumed that the (3) participants were current smokers, once again choosing to be conservative. Percentages were reported on the prevalence of nurses engaging in the key health promoting behaviors (i.e., yes vs. no).

Aim 2. Examine the relationship between self-efficacy, risk perception, intention, planning, work-related stress, resources (i.e., social support and hardiness), and engagement in the target health promoting behaviors.

For Aim 2, Pearson's correlational coefficients were calculated to examine the relationships of study variables with health behaviors at the bivariate level. A series of multiple logistic regression analyses were run to examine the associations of the independent variables (self-efficacy, risk perception, intention, planning, stress, hardiness and social support) on each of the dependent variables (i.e., engaging in 30 minutes of exercise 5 days a week; maintaining BMI within healthy range; consuming at least 5 servings of fruits and vegetables; and quitting smoking or never smoking) after controlling for sample demographics (e.g., age, gender, educational level, and years of work).

Aim 3. Explore expectations and cultural norms associated with engaging in health promoting behaviors among nurses.

All focus groups were transcribed verbatim after it was audio-taped (with permission from the participants), and then a thematic analysis was done on the transcribed data. According to Cohen, Kahn and Steeves (2000), a systematic coding and analysis are done in order to generate themes. First, dialogue was grouped by meaningful

units referred to as strips; and then the related strips were grouped into categories. The third and last steps included conceptualizing themes to provide comprehensive information and identify the relationship between the themes, taking into consideration the participants' context (cultural, socioeconomic, etc.). By this process, the emerging categories of data were further delineated along their respective properties and dimensions; and subcategories were generated. These categories and themes were reviewed by two nurse researchers, and areas of disagreement between individual raters were discussed and rectified.

In order to provide trustworthiness of our qualitative analysis, the researcher followed Guba's criteria of ensuring credibility; transferability, dependability, and confirmability (Guba & Lincoln, 1981). Credibility (in reference to internal validity) was addressed by having two researchers independently reading and coding the transcribed focus group sessions. Transferability (in reference to external validity/generalizability) was enforced by conducting further literature review. Confirmability (in reference to objectivity) was assessed by comparing the transcribed focus group sessions with the extensive notes taken by the nonparticipating note-taker at each of the focus groups. If resources allowed, not only would a focus group have been done but additional in-depth interviews would have also been conducted to ensure dependability (in reference to reliability). However, all the operational details of how the focus group data was gathered have been provided; and the process and its effectiveness have been evaluated.

H. Protection of Human Subjects

1. Sources of Data

This study was designed to explore the barriers and facilitators for engaging in health promoting behaviors. Participants filled out a 20-to-30 minute survey, and/or participants were in a semi-structured focus group. Both men and women, including minorities who met the inclusion criteria stated above, were recruited. Children did not meet the inclusion criteria and were not outreached.

2. Informed Consent

Informed written consent was obtained from every participant before the study and confidentiality of responses was assured to the participants. The consent described the nature of the study, the purposes of the research, and the potential risks and benefits of participation to the participant. Participation in this study was completely voluntary and would not affect the participant's position at his/her workplace. It was explained to the participants that they could withdraw from participation at any time with no consequences. There are no consequences for refusing to take part in the study or to answering only some of the questions. For those participants using the anonymous web-based survey, informed consent was obtained when the participant clicks on the "I agree" button to indicate that they had read the consent and agree to the study.

2. Potential Risks

This is a minimal risk study. Participants were sharing via survey and/or focus group discussions their experiences as nurses who may or may not engage in health promoting behaviors. Physical, psychological, social, legal, or other risks associated with this study were minimal.

3. Steps to Minimize Risks

This study minimized the risk while maximizing the benefit for the participants. Personal identifiable data (e.g., name) were not used in the quantitative survey; and, for the qualitative focus group, pseudo-names were used. All paper data were stored in locked files and kept entirely confidential. Only the researchers had access to the data. Identifiers were destroyed after the data were entered into the computer and the data collection process is complete. The researcher ensured that the data collected via the internet were stored in an encrypted format, and a professionally-trained person in expertise in internet security conducted a regularly-scheduled security audit of the server. Data backups were stored in a secure data room in a controlled environment that has limited access. Recorded conversations were transcribed verbatim within a week's time after the focus group was conducted. After the data had been transcribed and analyzed, the recorder tape was deleted. The transcribed data was saved on the secured network drive and accessed at the Johns Hopkins University School of Nursing.

4. Confidentiality

Personal information that is revealed to the researcher was kept confidential. The content of the focus group was not shared with anyone except with the researchers involved in this study. The participant's confidentiality was protected by developing pseudo-names for the participants and using the pseudo-names on all forms including the notes taken by the observer. Any direct quotes and summaries reported in the results section also utilized the pseudo-names.

5. Respect for People's Rights, Dignity, and Diversity

The researcher respected the rights, dignity, and worth of all participants. During the survey and focus group, the researcher was respectful of the rights of others to hold values, attitudes, and opinions that differ from her own.

I. Summary

In this chapter, we described the research methods and procedures that were used for this study on nurses' engagement in health promoting behaviors. This research used a mixed-methods study design with cross-sectional correlation descriptive study for quantitative data and focus groups for qualitative data. The reliability, validity, and scoring of the study instruments were discussed. The statistical analyses to test the research questions included descriptive statistics and logistic regression. The qualitative data analysis used the thematic coding method. Also, the measures to protect the rights of the participants were discussed.

CHAPTER 4: RESULTS

A. Survey Sample Characteristics

As seen in Table 4, a summary of the demographic characteristics of the study sample was shared, and overall, the survey was completed by nurses who were white, young and reported being comfortable with their income level. Specifically, the majority of the respondents were female (91.8%) and white (71.1%). Although, lower in numbers, the remaining nonwhite respondents (29%) represented a diverse race/ ethnicity group that included Blacks, Asians, Hispanics, Native American/Pacific Islanders, and Biracial. Over 70% of the survey respondents were younger than 40 years old, and greater than half reported being married. Most of the sample reported being “it’s ok,” “comfortable,” or “very comfortable” with their income level: 54.3% reported being “comfortable” with their income level; 31.5% reported that “it’s ok”; and 9.1% who reported being “very comfortable” with their income level.

Majority of the nurses also self-reported that their physical and mental health were “excellent” or “good”. There were 66.4% of the nurses in the sample who checked their physical health as being “good,” and similarly, 62.5% who checked their mental health as being “good.” Less than 15% of the sample rated their physical health as being “fair” (13.4%) or “poor” (1.3%); and less than 10% of the sample rated that their mental health was “fair” (7.8%) or “poor” (0.9%).

Table 4. Demographic Characteristics of Study Sample (N=228)

Demographic characteristics	n	%*
Gender (n=226)		
Female	209	91.7
Male	17	7.5
Race/Ethnicity (n=220)		
White	161	70.6
Black	24	10.5
Asian	24	10.5
Hispanic	6	2.6
Native American/ Pacific Islander	1	0.4
Biracial	4	1.8
Age (n=224)		
Under 30	95	41.7
Aged 30-39	67	29.4
Aged 40 and older	62	27.2
Marital Status (n=225)		
Married/Partnered	121	53.1
Divorced/Widowed	18	7.9
Never married/Single	86	37.7
Income level (n=228)		
Very comfortable	20	8.8
Comfortable	124	54.4
It's Ok	73	32.0
Difficult to manage	11	4.8
Physical health (n=228)		
Excellent	43	18.9
Good	152	66.7
Fair	30	13.2
Poor	3	1.3
Mental health (n=228)		
Excellent	66	28.9
Good	143	62.7
Fair	18	7.9
Poor	1	0.4
Demographic characteristics	n	%*
Gender (n=231)		
Female	213	91.8
Male	18	7.8

Race/Ethnicity (n=220)		
White	165	71.1
Black	25	10.8
Asian	25	10.8
Hispanic	6	2.6
Native American/ Pacific Islander	1	0.4
Biracial	4	1.7
Age (n=230)		
Under 30	95	40.9
Aged 30-39	69	29.7
Aged 40 and older	66	28.7
Marital Status (n=229)		
Married/Partnered	123	53.0
Divorced/Widowed	19	8.2
Never married/Single	87	37.5
Income level (n=232)		
Very comfortable	21	9.1
Comfortable	126	54.3
It's Ok	73	31.5
Difficult to manage	12	5.2
Physical health (n=232)		
Excellent	44	19.0
Good	154	66.4
Fair	31	13.4
Poor	3	1.3
Mental health (n=232)		
Excellent	67	28.9
Good	145	62.5
Fair	18	7.8
Poor	2	0.9

*Percentages may not total 100 due to missing values

When looking at specific nursing characteristics in Table 5, majority of the nurses (72.0%) had their bachelor's degree in nursing (BSN). There were 19.8% who completed their associate's degree in nursing (ADN) or diploma degree and 8.2% had their master's degree or higher. In the study sample, there were 25.0%, 40.9% and 33.2% in the less than 3 years of experience, 3 years up to 10 years and 10 years and more, respectively.

The nurses had fairly equal distribution of shifts work: 28.9% worked day/evening shifts; 30.2% worked only night shifts; and 40.5% worked rotating shifts which included all combination of shift rotation.

Table 5. Nursing Characteristics of the Study Sample (N=228)

Nursing characteristics	n	%*
Degree (n=228)		
ADN/Diploma	45	19.8
BSN	165	72.4
Masters	18	7.9
Years of experience (n=226)		
< 3 yr	58	25.4
3 yrs to < 10 yrs	93	40.8
10 yrs or more yrs	75	32.9
Shift worked (n=227)		
Days/Evening	66	28.9
Nights	68	29.8
Rotating	93	40.8

*Percentages may not total 100 due to missing values

B. Aim 1: Prevalence of Health Promoting Behaviors among Nurses

In this study, health promoting behaviors included the following: engaging in 30 min of exercise 5 days a week; maintaining BMI within healthy range; consuming at least 5 servings of fruits and vegetables; and quit smoking or never having smoked. The study sample reported varying degrees of healthy behaviors (Table 6). For example, there were 28% of the nurses who exercised the recommended amount in a given week; more than half of the nurses were within the healthy BMI range based on self-reported heights and weights; and close to half of the sample (44.4%) consumed at least 5 servings of fruits and vegetables a day. Finally, a majority of the nurses indicated that they did not smoke (91.4%). After further investigation of the nurses who engaged in smoking, older nurses

were 62% less likely to be nonsmokers (or 1.6 times more likely to be smokers) compared to the younger nurses (OR=0.38, CI=0.14-1.01).

In Table 6, when looking at how many of the healthy behaviors the nurses engaged in, over a third of the sample (35.1%) engaged in only 2 of the 4 health promoting behavior measures. Close behind, there was 28.1% of the sample that engaged in 3 of the health promoting behavior and impressively 11% of the nurses who engaged in all 4 of the healthy behaviors. There was 5.7% of the sample who reported not engaging in any of the healthy behaviors.

Table 6. Prevalence of Healthy Behaviors (N=228)

Healthy behaviors	n	%
Smoking		
Nonsmokers (include those who quit >1 yr)	208	91.2
Smokers	20	8.8
5 servings of fruits and vegetables		
Met	101	44.3
Not met	127	55.7
Exercised 5x a week		
Met	64	28.1
Not met	164	71.9
Weight Control *		
Underweight (BMI <18.5)	2	0.9
Healthy weight ($18.5 \leq \text{BMI} < 25$)	126	55.3
Overweight ($25 \leq \text{BMI} < 30$)	51	22.4
Obese weight ($\text{BMI} \geq 30$)	41	18.0
Engaged in the healthy behaviors*		
None	13	5.7
1	38	16.7
2	80	35.1
3	64	28.1
All 4	25	11.0

*Total of 8 missing values of height and/or weight

C. Aim 2: Correlates of Nurses' Health Promoting Behaviors

The four health promoting behaviors were examined separately on the relationships with the selected variables based on the Health Action Plan Approach (HAPA) framework. In Table 7, gender and social support had statistically significant relationships with nurses' non-smoking status. Male nurses were 83% less likely to be nonsmokers or 5 times more likely to be smokers when compared to female nurses (Odds Ratio [OR] =0.17; 95% Confidence Interval [CI] = .05-.56). After controlling for demographics nurses with higher level of social support were 6 times more likely to not smoke (adjusted OR=5.91; 95% CI=1.23-28.4) as seen in Table 8. Nurses with higher level of self-efficacy were 4 times more likely to be nonsmokers but with a p-value of 0.08, the relationship was not statistically significant.

Table 7. Characteristics of the survey sample by smoking status (N=228)

Variables*		All n (%)		OR (95%CI)
		Smokers n=20	Nonsmokers n=208	
Age	< 35yo	7 (35.0)	124 (59.6)	.38 (.14-1.01)
	35yo or older	12 (60.0)	81(38.9)	
	Missing	1 (5.0)	3 (1.4)	
Gender	Female	14 (70.0)	195 (93.8)	.17 (.05-.56)**
	Male	5 (25.0)	12 (5.8)	
	Missing	1 (5.0)	1 (0.5)	
Race	White	12 (60.0)	149 (71.6)	.69 (.23-2.08)
	Not white	7 (35.0)	52 (25.0)	
	Missing	1 (5.0)	7 (3.4)	
Marital status	Married	9 (45.0)	112 (53.9)	.76 (.30-1.94)
	Not married	10 (50.0)	94 (45.2)	
	Missing	1 (5.0)	2 (1.0)	
Education	ADN/Diploma	4 (20.0)	41 (19.7)	1.02 (.32 – 3.21)
	BSN/Graduate	16 (80.0)	167 (80.3)	
Experience	< 10 yrs	12 (60.0)	139 (66.8)	.84 (.32-2.23)
	≥10 yrs	7 (35.0)	68 (32.3)	

	Missing	1 (5.0)	1 (0.5)	
Income	Comfortable	9 (45.0)	135 (64.9)	.44 (.18-1.12)
	Difficult	11 (55.0)	73 (35.1)	
Self-efficacy	Low	14 (70.0)	106 (51.0)	2.73 (.96-7.77)
	High	6 (30.0)	102 (49.0)	
Intention	Low	10 (50.0)	110 (52.9)	.89 (.36-2.23)
	High	10 (50.0)	98 (47.1)	
Planning	No	6 (30.0)	51 (24.5)	.00 (.00-.)
	Yes	14 (70.0)	157 (75.5)	
Social support	Low	17 (85.0)	98 (47.1)	6.36 (1.81-22.36) **
	High	3 (15.0)	110 (52.9)	
Hardiness	Low	11 (55.0)	104 (50.0)	1.22 (.49-3.07)
	High	9 (45.0)	104 (50.0)	
Work-related stress	Low	12 (60.0)	103 (49.5)	1.53 (.60-3.90)
	High	8 (40.0)	105 (50.5)	
Shift Work	Days	6 (30.0)	60 (28.8)	1.14 (.41-3.13)
	Nights/Rotating	13 (65.0)	148 (71.2)	
	Missing	1 (5.0)	-	

* Reference groups were as follows : < 35yrs old for age; female for gender; white for race; married for marital status; ADN/Diploma for educational level; < 10yrs for experience; comfortable for income; day shift for shift worked; and low levels for self-efficacy, intention, social support, hardiness and work-related stress.

**Pearson Chi Square p-value or Fischer's Exact Test p-value < 0.05

Table 8. Adjusted odds ratios between HAPA[±] variables and nonsmokers*

Variables	OR	95% CI	<i>p</i>
Self-efficacy	3.80	0.84-17.20	0.08
Planning	0	.00-.00	1.00
Intention	0.77	0.23-2.59	0.67
Social Support	5.91	1.23-28.38	0.03**
Hardiness	1.11	0.30-4.13	0.88
Work Stress	2.14	0.62-7.41	0.23
Shift Work	1.79	0.47-6.80	0.39

[±]HAPA (Health Action Process Approach)

*Controlled for variables income, marital status, educational level, experience, age, race, gender, shift worked. Referent group are nurses who are smokers.

**Statistically significant, p-value < 0.05

For maintaining their body mass index (BMI) within the healthy weight (BMI=18.5-24.9) range, statistically significant relationships were seen in age, gender, years of experience, planning, intention, and social support (Table 9). Male nurses were over 70% less likely to maintain a healthy weight compared to female nurses (OR=0.28; 95% CI=.09-.93). Nurses who are ≥ 35 yrs old and had more experience were 58% or 56%, respectively, less likely to maintain a healthy weight when compared to nurses who were younger and had less experience. When demographic variables were controlled as seen in Table 10, nurses with higher levels of planning were 3 times more likely to maintain a healthy weight (adjusted OR=2.85; 95% CI=1.28-6.34) whereas nurses with higher levels of intention were 50% less likely to have a BMI in the healthy range (adjusted OR=0.52; 95% CI=.28-.98). Nurses with higher level of social support were nearly twice more likely to keep their BMI in the healthy range (OR=1.79; 95% CI=1.04-3.07); however, when controlled for demographics, the significant difference was no longer seen.

Table 9. Characteristics of the survey sample by healthy weight (BMI 18.5-24.9) (N=220)[±]

		All n (%)		
Variables*		Unhealthy weight n=95	Healthy weight n=125	OR (95%CI)
Age	< 35 yrs old	45 (47.4)	85 (68.0)	.42(.24-.73)**
	≥ 35 yrs old	49 (51.6)	39 (31.2)	
	Missing	1 (1.1)	1 (0.8)	
Gender	Female	85 (89.5)	120 (96.0)	.28 (.09-.93) **
	Male	10 (10.5)	4 (3.2)	
	Missing	-	1 (0.8)	
Race	White	65 (68.4)	92 (73.6)	.81 (.42-1.57)

	Not white	27 (28.4)	29 (23.2)	
	Missing	3 (3.2)	4 (3.2)	
Marital status	Married	56 (58.9)	62 (49.6)	1.47 (.86-2.53)
	Not married	38 (40.0)	62 (49.6)	
	Missing	1 (1.1)	1 (0.8)	
Education	ADN/Diploma	19 (20.0)	23 (18.4)	1.11 (.56-2.18)
	BSN/Graduate	76 (80.0)	102 (81.6)	
Experience	< 10 yrs	54 (56.8)	93 (74.4)	.44 (.25-.78) **
	≥10 yrs	41 (43.2)	31 (24.8)	
	Missing	-	1 (0.8)	
Income	Comfortable	56 (58.9)	84 (67.2)	.70 (.40-1.22)
	Difficult	39 (41.1)	41 (32.8)	
Self-efficacy	Low	52 (54.7)	64 (51.2)	1.22 (.71-2.08)
	High	43 (45.3)	61 (48.8)	
Planning	No	29 (30.5)	18 (14.4)	2.6 (1.35-5.07) **
	Yes	66 (69.5)	107 (85.6)	
Intention	Low	42 (44.2)	74 (51.2)	.55 (.32-.94) **
	High	53 (55.8)	51 (40.8)	
Social support	Low	54 (56.8)	53 (42.4)	1.79 (1.04-3.07) **
	High	41 (43.2)	72 (57.6)	
Hardiness	Low	48 (50.5)	62 (49.6)	1.04 (.61-1.77)
	High	47 (49.5)	63 (50.4)	
Work-related stress	Low	50 (52.6)	62 (49.6)	1.13 (.66-1.93)
	High	45 (47.4)	63 (50.4)	
Shift Worked	Days	29 (30.5)	34 (27.2)	1.18 (.65-2.12)
	Nights/Rotating	66 (69.5)	91 (72.8)	

⁺missing height and/or weight to calculate BMI for eight participants

* Reference groups were as follows : < 35yrs old for age; female for gender; white for race; married for marital status; ADN/Diploma for educational level; < 10yrs for experience; comfortable for income; day shift for shift worked; no plans for planning; and low levels for self-efficacy, intention, social support, hardiness and work-related stress.

**Statistically significant, p-value < 0.05

Table 10. Adjusted odds ratios between HAPA[±] variables and maintaining body mass index (BMI) within healthy weight (BMI=18.5-24.9)*

Variables	OR	95% CI	<i>p</i>
Self-efficacy	1.49	0.76-2.92	0.30
Planning	2.85	1.28-6.34	0.01**

Intention	0.42	0.22-0.80	0.01**
Social Support	1.67	0.86-3.25	0.13
Hardiness	0.76	0.39-1.48	0.42
Work Stress	1.05	0.55-2.01	0.88
Shift Work	1.10	0.53-2.27	0.80

[‡]HAPA (Health Action Process Approach)

*Controlled for variables income, marital status, educational level, experience, age, race, and gender. Referent group is nurses who do not have healthy BMI.

**Statistically significant, p-value < 0.05

Education came out as a demographic characteristic that had a significant relationship with fruits and vegetable consumption among nurses in Table 11. In particular, nurses with a bachelors or higher degree were 55% less likely to partake the recommended servings of fruits and vegetables daily than nurses with an associate or diploma degree (OR=.45; 95% CI=.23-.88). In addition, self-efficacy, planning and hardiness also had significant relationships with consuming at least 5 servings of fruits and vegetables. In Table 12, after controlling for demographics, hardiness no longer had a statistically significant relationship (adjusted OR=1.67; 95% CI=0.86-3.24) but nurses with higher level of social support were twice more likely to eat healthy (adjusted OR=2.21; 95% CI=1.29-3.76). And if the nurses said that they had a plan, they were 7 times more likely to consume the recommended 5 servings of fruit and vegetables in a day (adjusted OR=6.91; 95% CI=2.72-17.57).

Table 11. Characteristics of the survey sample consuming at least 5 servings of fruits and vegetables (F&V) daily (N=228)

		All n (%)		
Variables*		< 5 servings F&V n=127	≥ 5 servings F&V n=101	OR (95%CI)
Age	< 35 yrs old	78 (61.4)	53 (52.5)	1.44 (.84-2.46)
	≥ 35 yrs old	47 (37)	46 (45.5)	
	Missing	2 (1.6)	2 (2.0)	
Gender	Female	115 (90.6)	94 (93.1)	.67 (.24-1.87)
	Male	11 (8.7)	6 (5.9)	
	Missing	1 (0.8)	1 (1.0)	
Race	White	84 (66.1)	77 (76.2)	.55 (.28-1.07)
	Not white	38 (29.9)	21 (20.8)	
	Missing	5 (3.9)	3 (3.0)	
Marital status	Married	69 (54.3)	52 (51.5)	1.09 (.65-1.86)
	Not married	57 (44.9)	47 (46.5)	
	Missing	1 (0.8)	2 (2.0)	
Education	ADN/Diploma	18 (14.2)	27 (26.7)	.45 (.23-.88) **
	BSN/Graduate	109 (85.8)	74 (73.3)	
Experience	< 10 yrs	88 (69.3)	63 (62.4)	1.36 (.78-2.37)
	≥10 yrs	38 (29.9)	37 (36.6)	
	Missing	1 (0.8)	1 (1.0)	
Income	Comfortable	77 (60.6)	67 (66.3)	.78 (.45-1.35)
	Difficult	50 (39.4)	34 (33.7)	
Self-efficacy	Low	77 (60.6)	43 (42.6)	2.21 (1.29-3.76) **
	High	50 (39.4)	58 (57.4)	
Planning	No	50 (39.4)	7 (6.9)	8.7 (3.74-20.33) **
	Yes	77 (60.6)	94 (93.1)	
Intention	Low	71 (55.9)	49 (48.5)	1.35 (.80-2.27)
	High	56 (44.1)	52 (51.5)	
Social support	Low	70 (55.1)	45 (44.6)	1.53 (.90-2.59)
	High	57 (44.9)	56 (55.4)	
Hardiness	Low	75 (59.1)	40 (39.6)	2.20 (1.29-3.75) **
	High	52 (40.9)	61 (60.4)	
Work-related stress	Low	57 (44.9)	58 (57.4)	.60 (.36-1.02)
	High	70 (55.1)	43 (42.6)	
Shift Work	Days	34 (26.8)	32 (31.7)	.80 (.45-1.42)
	Nights/Rotating	92 (72.4)	69 (68.3)	

	Missing	1 (0.8)	-	
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* Reference groups were as follows : < 35yrs old for age; female for gender; white for race; married for marital status; ADN/Diploma for educational level; < 10yrs for experience; comfortable for income; day shift for shift worked; no plans for planning; and low levels for self-efficacy, intention, social support, hardiness and work-related stress.

**Statistically significant, p-value < 0.05

Table 12. Adjusted odds ratios between HAPA[±] variables and consuming 5 servings of fruits and vegetables*

Variables	OR	95% CI	<i>p</i>
Self-efficacy	2.04	1.05-3.96	0.04**
Planning	6.91	2.72-17.57	0.00**
Intention	1.02	0.53-1.94	0.96
Social Support	1.00	0.50-1.98	1.00
Hardiness	1.67	0.86-3.24	0.13
Work Stress	0.52	0.27-1.01	0.06
Shift Work	.97	0.47-2.03	0.94

[±]HAPA (Health Action Process Approach)

*Controlled for variables income, marital status, educational level, experience, age, race, gender. Referent group are nurses who do not consume 5 servings of fruits and vegetables.

**Statistically significant, p-value < 0.05

As for engaging in the recommended 30 minutes of physical activity 5 times a week, there were no statistically significant relationships revealed for the demographic variables in Table 13; however, for other variables such as self-efficacy, planning, and hardiness, a statistically significant relationship was found. Nurses with higher levels of self-efficacy were twice more likely be physically active compared to nurses with lower levels of self-efficacy; however, after controlling for the demographics, in Table 14, self-efficacy no longer had a statistically significant relationship. Nurses, however, who had a

plan to exercise were 5.5 times more likely to engage in the physical activity (adjusted OR=5.55; 95% CI=1.80-17.11). Also, nurses who had higher levels of hardiness were also twice more likely to engage in the 30 minutes of physical activity 5 times a week (adjusted OR=2.15; CI=1.05-4.43).

Table 13. Characteristics of the survey sample engaging in at least 30 minutes of exercise 5 times a week (N=228)

		All n (%)		
Variables*		Physically inactive n=164	Physically active n=64	OR (95% CI)
Age	< 35 yrs old	94 (57.3)	37 (57.8)	.88 (.49-1.61)
	≥ 35 yrs old	69 (42.1)	24 (37.5)	
	Missing	1 (0.6)	3 (4.7)	
Gender	Female	151 (92.1)	58 (90.6)	1.09 (.37-3.22)
	Male	12 (7.3)	5 (7.8)	
	Missing	1 (0.6)	1 (1.6)	
Race	White	112 (68.3)	49 (76.6)	.58 (.29-1.20)
	Not white	47 (28.7)	12 (18.8)	
	Missing	5 (3.0)	3 (4.7)	
Marital status	Married	90 (54.9)	31 (48.4)	1.23 (.69-2.22)
	Not married	73 (44.5)	31 (48.4)	
	Missing	1 (0.6)	2 (3.1)	
Education	ADN/Diploma	33 (20.1)	12 (18.8)	1. (.52-2.28)
	BSN/Graduate	131 (79.9)	52 (81.2)	
Experience	< 10 yrs	111 (67.7)	40 (63.5)	1.23 (.67-2.26)
	≥10 yrs	52 (31.9)	23 (36.5)	
	Missing	1 (0.8)	1 (1.0)	
Income	Comfortable	103 (62.8)	41 (64.1)	.95 (.52-1.73)
	Difficult	61 (37.2)	23 (35.9)	
Self-efficacy	Low	96 (58.5)	28 (43.8)	1.82 (1.01-3.25) **
	High	68 (41.5)	36 (56.2)	
Planning	No	56 (34.1)	5 (7.8)	6.12 (2.32-16.11) **
	Yes	108 (65.9)	59 (92.2)	
Intention	Low	89 (54.3)	31 (48.4)	1.26 (.71-2.25)
	High	75 (45.7)	33 (51.6)	
Social support	Low	89 (54.3)	26 (40.6)	1.73 (.97-3.12)

	High	75 (45.7)	38 (59.4)	
Hardiness	Low	93 (56.7)	22 (34.4)	2.50 (1.37-4.56) **
	High	71 (43.3)	42 (65.6)	
Work-related stress	Low	80 (48.8)	35 (54.7)	.79 (.44-1.41)
	High	84 (51.2)	29 (45.3)	
Shift Work	Days	47 (28.7)	19 (29.7)	.93 (.49-1.76)
	Nights/Rotating	117 (71.3%)	44 (68.8)	
	Missing	-	1 (1.6)	

* Reference groups were as follows : < 35yrs old for age; female for gender; white for race; married for marital status; ADN/Diploma for educational level; < 10yrs for experience; comfortable for income; day shift for shift worked; and low levels for self-efficacy, intention, social support, hardiness and work-related stress.

**Statistically significant, p-value < 0.05

Table 14. Adjusted odds ratios between HAPA[±] variables and engaging in recommended amount of physical activity*

Variables	OR	95% CI	<i>p</i>
Self-efficacy	1.58	0.79-3.18	0.20
Planning	5.55	1.80-17.11	0.00**
Intention	1.19	0.61-2.35	0.61
Social Support	1.39	0.68-2.86	0.37
Hardiness	2.15	1.05-4.43	0.04**
Work Stress	0.76	0.38-1.53	0.44
Shift Work	1.11	0.51-2.42	0.80

[±]HAPA (Health Action Process Approach)

**Controlled for variables income, marital status, educational level, experience, age, race, gender. Referent group are nurses who do not engage in the recommended amount of physical activity.

**Statistically significant, p-value < 0.05

In summary, from the binary logistic regression analysis individual characteristics such as gender, age, years of experience and level of education showed a statistically significant relationship with one or more of the dependent variables that included quit smoking or never having smoked; maintaining a healthy BMI range; consuming at least 5

servings of fruits and vegetables daily; and engaging in 30 minutes of exercise 5 days a week. The older the nurse was; more experienced the nurse had; or being a male nurse, the more likely that the nurse did not maintain a healthy weight (BMI = 18.5 -24.9). If the nurse did not have a bachelor or higher degree of education, the more likely she or he would consume the daily recommended servings of fruits and vegetables. After controlling for demographic characteristics, nurses who stated that they had a plan had a strong likelihood of maintaining a healthy BMI; eating healthy; and engaging in weekly recommended amount of physical activity. Nurses with high levels of social support were more likely not to be smoked or have quit smoking for more than 6 months. Also, for self-efficacy, high levels were positively associated with consuming the recommended fruits and vegetables daily. And similarly, nurses with high levels of hardiness had a statistically significant relationship with exercising weekly.

D. Aim 3: Expectations of Nurses' Engaging in Health Promoting Behavior

1. Focus Group Participant Characteristics

The characteristics of the focus group participants are shown on Table 15. Among the 4 focus groups, there were a total of 14 participants which is 6% of the survey sample. Many of the demographics of the focus group had a similar breakdown to the main survey sample including gender, race, marital status, education level. Females dominated both the focus group and survey sample at 93%. As for race, more than three quarters of the focus group identified themselves as white. Half of the focus group was married and the other half fell into either the divorced/widowed group or never married/single group. And, two thirds (64.3%) of the focus group reported having a bachelors of nursing as their highest degree. As for the shift worked, we had a fairly

evenly distributed number among the day/evening shift, night shift or rotating shift. There were slightly less number of night shift nurses who participated with the focus group (21.4%) compared to the nurses who participated in the survey (40%). The focus group had half of the nurses who have worked 10 or more years whereas, but in the survey sample, there were more nurses with 3-10 years of experience. In the focus group, only the nurses who did not smoke participated and these nurses also engaged in at least one or more of the four healthy behaviors. The focus group participants once again had similar breakouts compared to the survey sample of those who consumed at least 5 servings of fruits and vegetables daily or exercised at least 30 minutes 5 times a week. Out of 14 participants in the focus group, 57.1% and 78.6%, respectively, did not engage in the healthy behaviors mentioned above. There were more focus group nurses (35.7%) compared to the survey sample (18.1) who self reported having obese weight (as signified by their calculated BMI).

Table 15. Focus Group Characteristics (N=14)

Nurse Characteristics	n	%	Sample%
Gender			
Female	13	92.9	92.5
Male	1	7.1	7.5
Race/Ethnicity			
White	11	78.6	70.6
Black	2	14.3	10.5
Asian	1	7.1	10.5
Age			
Under 30	6	42.9	41.7
Aged 30-39	2	14.3	29.4
Aged 40 and older	6	42.9	27.2
Marital Status			
Married/partnered	7	50	53.1
Divorced/widowed	1	7.1	7.9
Never married/single	6	42.9	37.7

Degree			
ASN/AND/Diploma	3	21.4	19.7
BSN	9	64.3	72.4
Masters	2	7.9	7.9
Years of experience			
< 3 yr	4	28.6	25.4
3 yrs to < 10 yrs	3	21.4	40.8
10 yrs or more yrs	7	50.0	32.9
Shift worked			
Day/Evening	5	35.7	28.9
Night	3	21.4	39.8
Rotating	6	42.9	40.8

2. Themes

In order to explore the expectations and cultural norms associated with engaging in health promoting behaviors among nurses, content analysis was conducted on the transcribed focus group interviews. After conducting several reiterative inductive and deductive methods, the content analysis yielded seven categories of facilitators, six categories of barriers, and two categories of “what works.” As seen in Table 16, there were four categories that overlapped and were found under both the barriers and the facilitators which left five categories that were found exclusively under barriers or the facilitators. Among the categories, the researcher further grouped them as either being internal categories or external categories. External categories were considered those that were out of the focus group participants’ control while the internal categories were considered to be within the participants’ control or dependent on the participants’ characteristics. The external categories included environment, peer pressure, social support at work, work-related stress, 12-hr shifts, programs and suggestions; and the internal categories included strength of a nurse, altruistic nurses, excuses/ motivation, and

knowledge (Table 16). The categories were derived from subcategories that were formed from the quotes analyzed as laid out in Appendix L.

Table 16. Summary of Themes

	Barriers	Facilitators
<i>External Categories</i>	<i>Subcategories</i>	<i>Subcategories</i>
Environment	Unhealthy foods	Smoking areas
	Poor food choices	
Peer pressure	Co-workers not eating healthy	Co-workers eating healthy
	Smoke breaks	
Social support		Accountability
		Empathy
		Teamwork
		Second family
Work-related stress	Sick patients	
	Increased workload	
	Constant changes	
12 hr shifts	Lack of time	
	Too tired	
	Too late	
	Too busy (at work)	
<i>Internal Categories</i>	<i>Subcategories</i>	<i>Subcategories</i>
Strength of a nurse		Functioning well under stress
		Building resilience
		Leaving work at work
Altruistic nurses	Putting patient first	
	Making sacrifices	
	Caring for co-workers	
	Saving the work mentality	
Excuses/Motivation	Physical at work	Ready to change
	Bad behaviors as a child	Learned behavior as a child
Knowledge	Taking care of ourselves	Good understanding

2a. External Barriers: Environment

Under the external barriers, the subcategories for environment include “unhealthy food as rewards” and “poor food choices.” Easily, these two subcategories were

mentioned by the participants in the first three focus groups; and so, it was not further explored in the fourth focus group.

Unhealthy food as rewards

Nurses discussed how food was used as rewards whether it comes from the patients and families of the patients, administrators, and fellow co-workers. Food is given as a reward most commonly by the families of patients. Dottie shared how “families bring in food pretty constantly, (especially) when a family is usually happy with things.” Other examples given by the participants included how the unit was rewarded with pizza after moving into a new building or during nurses’ week, food was given to express colleagues’ appreciation. As stated by Martha, the food is “great, but it (is) a lot of pasta...not very nutritious.”

Poor food choices

Poor food choices within the hospital facility became a barrier for the nurses in engaging in healthy eating, especially for the nurses working the off shift. The vending machines and eateries were two sources where the nurses did not have healthy options. Ida who has worked at Johns Hopkins Hospital all of her nursing career noted that “23 years ago, all they had was a vending machine, it’s better...but it would be nice to have a little bit more- healthier choices at night.” Flo, who also works off shift like Ida, echoed Ida’s concern for lack of choices “after hours.” During the day, when all the eateries are opened for business, nurses may have more options; however, after the expansion of the hospital, nurses stated that it takes a long time, “half your lunch break,” to go to the other building to buy lunch. Maddie astutely comments that “if you don’t bring a healthy lunch well, the vending machine is looking kinda good.” Both Betty and Jean commented that

the vending machines are filled with foods high in calorie snacks and sodas that are not optimal for healthy eating.

2b. External Barriers: Peer pressure

Co-workers eating unhealthy

Peer pressure also proved to be a barrier for the nurses, especially for smoking and eating unhealthy behaviors. As for unhealthy eating, Betty who usually packs a healthy lunch shared that she may she is weak “when everybody else in front of you having a nice baked ziti, and you say no, I am not going to have (my nice lunch) and instead you go to subway.” People you work with may influence whether you engage or not engage in health promoting behaviors in the form of peer pressure as seen above.

Smoke breaks

Not surprisingly, Martha and Kat stated that nurses would smoke more if they had other smoking nurses working their shift. Martha noticed that nurses are “really close because they go out and smoke together”; and, Kat observed that “if (the smokers) don’t work together, they don’t smoke at all during the shift.”

2c. External Barriers: Work-related stress

Work-related stress was another key barrier noted by the nurses. Several subcategories emerged under this category: sick patients, increased workload, and constant changes. It appeared that dealing with death and sickness may be particularly difficult for the nurses that often led to a feeling that nobody would understand and stress. Increased workload and constant changes at work were also common encounters by the nurses as sources of stress.

Sick patients

Nurses shared how stress level could be elevated when dealing with sick patients. Gene felt that the nursing job “itself (does not) promote health” because of “the psychological stress you undergo, there’s a lot of unknown.” Gene, who works in the Intensive Care Unit, compared nursing job to be very different than the “constant dynamic like when you work in a factory, your job is set, cut and dry.” In nursing, “dynamic of sick people” may make your job “really really hard (for) next three weeks based on who is coming in and what is going on.” Both Jean and Cali shared the same sentiments on dealing with death/ crisis of a patient and helping the family cope may both be stressful on the nurses. Cali noted, “...when patients die, it’s hard on the families, but many of our nurses are much attached to those patients as well... And then you go home and no one wants to hear about it or they don’t understand it...so it gets swept to the back of your mind, there is a room back here (pointing to her head) where you put all in.”

Increased workload

Betty identified that the budget cut may be negatively reflected on staff when “there is no clerk tonight and so you are going to be the clerk and the charge nurse have all these nurses and all these patients”. Betty feels that “it is too much.” Similarly Patty pointed out that nurses have multiple roles – “we are not just the nurse (but) sometimes, we are the therapists, we are the secretary, and we basically help all the other professions connect.” Patty felt that our nursing job “is very stress induced” when you put together the multiple roles with the “attitude of your co-workers” and working long hours-over 12 hours shifts.

Constant changes

Dottie commented that nurses are “bombarded with change and that is increasing the stress level.” Once again, because of the budget cut, Maddie observed that

“They (the hospital) are constantly chipping away at our benefits, little at a time. Everything is disappearing that you are used to getting. So that is an extra stress too because you are wondering what else they are going to take from you. So you do feel more stress every time any little thing is taken because you are wondering what’s next.”

It is clear that stress may lead to unhealthy behaviors as commented by Ginnie who has been a nurse for less than a year. She shared that “all that kind of stress has made me regress in my healthy habits.” And Dottie who has been a nurse for over 30 years shared the same observation that especially when “we get these crush of information from central nursing, you know, clinical monthly update with six attachments... it is bringing their stress level up which I think it contribute to more unhealthy behaviors.”

2d. External Barriers: 12-hour shifts

The last category, under external barriers to engaging in healthy behaviors, is the 12 hour shifts; and, lack of time, being too tired, eating late, and being too busy are the four subcategories associated with the 12 hr shifts. Lack of time to think about their own health or even to shop for healthy foods was discussed across all four focus groups. Likewise, being too tired or too busy at work were commonly discussed subcategories across focus groups.

Lack of time

The nurses from the focus groups who worked the long 12-hour shift identified that time factor prevented them from healthy eating. Jean stated that she didn’t have the time to shop for healthy foods, let alone prepare the fruits and vegetables. Rosie shared the exact same thing with her focus group that “working 14 hour days, I don’t go to the

store after work, and so, if I work 3 days in a row and I run out, then I am having a Hot pocket for lunch the next day.” Maddie also noted that “at the end of a 12-hour day...there is very little time in a day and so... it doesn’t want to make you wanna go to the gym or take a long walk because there isn’t much time left to get stuff done.”

Too tired

From all four focus groups, nurses agreed that working 12 hour day can be tiring and sometimes stressful. Both Maddie and Kat commented on how they lacked the energy or were too tired to “take care of (themselves)” or “engage in healthy behaviors,” respectively. Ginnie further explained how hard it is to exercise after you have worked a 12 hr shift. She stated that “exercise and all that other stuff...it almost seems like you are punishing yourself...for instance, having chocolate or ice cream or sitting watching TV or just de-stressing in that way, it seems like instant gratification.” Gene confirmed that “you do not engage in healthy eating nor engage in any exercise when you are working three or four 12 hour shifts in a row.” Instead, Gene felt that “you are on a roller coaster ride in maintaining your health, especially, when working multiple days of 12hr shifts. Kat, a nurse from the pediatric department stated, “I don’t engage in those healthy behaviors because I am so tired when I get home from working 12 or 16 hours, chasing the kids around for 12 to 16 hours a day because my patients are not confined to bed.”

Too late

Similar to the concept of being too tired, the nurses expressed that after a 12hr shift, it is either too late to eat or too late to exercise. Maddie shared that by the time she arrives at home after a 12hr shift and a 45minute commute home, it is already 8 or 9pm at night. And so, if she has not eaten at work because it was too busy, then she would be

eating late and often times, she does not think it matters what she eats since she is eating so late anyway. Jean, who works night shifts, used her husband as an example. “He is a police officer and by the time he comes home from a long shift, he chooses not to exercise since he needs to sleep soon.”

Too busy (at work)

As mentioned above by Maddie, sometimes, it was hard for nurses to find time to eat if they were busy during their 12 hour shift. Gene mentioned it under work-related stress but there are many unknowns in nursing, and so, there may be shifts when nurses are too busy taking care of patients that they do not have the time to eat. In order to triage all the patient (up to 30 patients) on the OB unit, Hilda talked about she often had to forego eating meals and never mind on hydrating herself well. Rosie shared how there are days when she is only able to “sit for five seconds” before she has to hurry back to her patients.

From the focus groups, other barriers emerged and grouped under internal barriers. These barriers are those that an individual may be able to control. The three categories include: the altruistic nature of a nurse; excuses or lack of motivation, and (too much) knowledge that may prevent some nurses from seeking assistance.

2e. Internal Barriers: Altruistic nature of nurses

The four subcategories, putting patients first, making sacrifices, caring for co-workers, and saving the world mentality, were initially classified and then grouped under the category of the altruistic nature of nurses.

Putting patients first

The nurses, who participated in the focus groups, spoke about skipping lunch breaks because their patients needed something. Jean talked in general that people who go into nursing have a personality that gears them to caring for others; however, Kat specifically identified how unhealthy it is for nurses to not take their lunch break. Patty reminded her focus group that nurses often stay late to finish their documentation because “patient care came first”.

Making sacrifices

The next subcategory, “making sacrifices”, may be differentiated with the first subcategory of “patient first”, because the sacrifices are made for personal reasons in this subcategory. Maddie shared that working late, working long hours and being tired, may all limit the time she is able to spend with her family on that day. She thought that

“Anybody who do not work nursing do not understand and it’s hard to continue to say “I can’t, I can’t, I’m tired and I have this things to do” You end up sacrificing – things you would have done for yourself or sleep. Sleep is the first thing that goes for me.”

As for Betty, she shared how she may “compact 5-6 days in a row so that I can spend time with my child.” Betty has been a nurse for more than 20 years and so she commented how working “those six days ... it is taxing on my body”

Caring for co-workers

Putting co-workers need ahead of your own is not uncommon among the nurses, especially if she or he is in charge. Betty shared that “when I am in charge, I make sure (others) eat lunch and I would be the last person to eat.” As for Cali, even when she was sick for two weeks, she came back to work earlier than recommended because she didn’t want to leave the unit short-staffed. Nurses noted that they do not necessarily anticipate

the same level of support outside of their work. For example, Hilda noted that "...When you go home and are exhausted, I am not pushed to get on a treadmill. I tend to do it by myself because no one is pushing me."

Saving the world mentality

Nurses also tended to have the "we gotta save the world" mentality. For example, although Cali was concerned for her co-workers being short staffed, she also felt that the unit would have "died without (her)." Jean shared that similar trait where she also had the sense that everyone was depending on her. She stated that "everyone...depends on me, I am supposed to be doing everything otherwise something is going to go wrong." Apparently, nurses have this sense of being needed and often times, they forget about their own needs. Rosie felt that in the nursing profession, nurses tend to "do everything for everyone else (and) we leave ourselves in the dust."

2f. Internal Barriers: Excuses

Physical at work

As with many other people, the nurses at the focus groups also shared excuses as to why they didn't engage in healthy behaviors. Found under the category "excuses," nurses shared either work-related excuses to why they do not have to exercise or blamed it on their upbringing. Many of the nurses spoke about the physical nature of the nursing work. Gene and Kat talked about being on their feet all day and running up and down the hallways. Similarly, Rosie not only commented on running, but also on the moving and lifting which is "more activities than the regular population with normal jobs." Betty also felt that a nurse is physically busy, especially if you work in the ED or in the ICU. She talked about how nurses may sweat especially when caring for patients who are in

trauma; however, she acknowledged that even though “you (may) think you worked so hard but it is not a total workout.” Kat described it best when she said,

“You know, we justify that I don’t need to go the gym today because I spent two and a half hours chasing patient X around the unit, so you can justify that, ok, I did my physical activity for the day. We justify our own behavior.”

Bad behaviors as a child

Other excuse aside from thinking we get enough “physical activity” at work, is not being a healthy habit from childhood. It is possible that healthy behaviors such as consuming 5 servings of fruits and vegetables may be taught at a young age but Rosie shared that this was not the case for her. She stated that “when I was raised, we didn’t do that ... we had carrots with dinner and that was our vegetables for the day.” For Rosie, it is a struggle for her to eat five servings of fruits and vegetables every day.

2g. Internal Barriers: Knowledge

The last category for internal barriers to falls under knowledge. As health care professionals, Rosie felt that “(nurses) are more responsible for health in general since we have more knowledge.” Because of this, Kat observed that nurses do not seek out for other health professionals input. Kat pointed out that

“I think (nurses) tend to take of ourselves instead of seeking outside, we are not going to seek a personal trainer because we think we can do it on our own. We are not going to go see a nutritionist because we have the education and can make healthy choices ourselves.”

This kind of attitude served as a barrier for nurses to engage in healthy behaviors.

2h. External Facilitators: Environment

Nurses participating in the focus group also discussed facilitators that help nurses to engage in healthy behaviors. The final categories headings of external facilitators were labeled as the environment, peer pressure, social support at work and successful

programs/suggestions, and of internal facilitators were labeled as the strength of a nurse, knowledge, and motivation.

Designated areas where people can smoke seem to have helped nurses to smoke less as observed by the focus group. For example, Hilda noted that “because we moved to a non smoking facility and the smoking areas are further away ... there aren’t many nurses who smoke on our unit.” This is an example of how the environment has served as a facilitator for engaging in the healthy behavior of not smoking among nurses.

2i. External Facilitators: Peer pressure

Co-workers eating healthy

Peer pressure was mentioned as a barrier but during the focus group, it also appeared as a facilitator as well, mostly for healthy eating. Martha agreed as she noted that it is the “opposite of the negative pressure of smoking (and it is) a positive pressure to eat healthy.” Hilda mentioned the importance of changing the culture and although it may be hard, she wanted to encourage her co-workers to bring in fruits and vegetables instead of ordering out. According to Ginnie, she felt that

“When you see people eating healthy, happy with their salad, it encourages you also, like oh, my lunch should be a little more healthier because everyone else is eating healthy (laughing).”

As explained by Kat, the peer pressure aids in engaging in healthy behavior because “if you see everyone else doing it, you are going to do it too.”

2j. External Facilitators: Social support at work

Social support at work was a popular category where the nurses were able to identify some facilitators to engaging in healthy behaviors. There were four

subcategories, accountability, co-worker's empathy, working as team, and second family that emerged that fell under the umbrella of social support at work.

Accountability

The nurses shared about the encouragement they receive from their co-workers as a form of social support. Rosie shared how her co-workers “work together to manage health together and eat better, and exercise more.” She felt that reporting to each other how many pounds they lost could be a form on accountability. Hilda also talked about how she receives encouragement from her co-workers to eat salad instead of eating burgers and fries. Hilda shared that she doesn't necessarily receive similar support at home. For example, she shared that when she is at home, “I am not pushed to get on a treadmill.”

Empathy from co-workers

The encouragement received by the co-workers appeared to be an important element but also the empathy they received from their co-workers was also mentioned by the focus groups. The empathy comes because the work they do as nurses are not always understood by family members or friends; instead, Dottie and Patty talked about how you bond with the people at work. Patty specifically stated that your co-workers “will experience with you your worse moments” and Dottie stated “that people who are not in this profession don't necessarily always get it.” And so, Cali explained the social support she receives from going to lunch with a co-worker to “run through our scenarios and that kind of thing.”

Teamwork

In the same vein, another subcategory that emerged was the importance of teamwork among your co-workers. Gene was animated when sharing how having “good teamwork at work ... makes your job more enjoyable and positive.” Gene felt that

“Maybe with teamwork, I think about my pals at work, all of a sudden, it is comical and you go in there and make the best of the situation. So, there is pleasure involved in that. With laughter, there’s endorphin rushes, you get the good hormone. So, maybe the pleasure is being substituted in some way.”

He further explained that “people are eating unhealthy or smoking... (during) the alone times when you are stressed out.” According to Gene, teamwork is the solution since “having someone do that makes it a lot easier (and) I think the stress level goes down when that happens.”

Second family

One more subcategory that emerged was that the social support at work is having a second family at work. As mentioned above, your co-workers empathize and may encourage you but that all comes about because you spend so much time with your co-workers. Jean and Hilda talked about the hours you spend with your co-workers and how they may be considered your second family. One a given day, it is possible to spend more hours with your co-workers than you may with your own family at home. Patty, in similar fashion with Gene above, talked about if “you are alone and you can't enjoy (nursing) and you want to get out it.” For Patty, “that social support is critical in nursing field.” Jean statement is in agreement with Patty when she shared that at work, “you get social support all day long as long they promote good things.”

2k. Internal Facilitator: Strength of a nurse

Other group of facilitators includes the internal ones, that the nurses themselves are able to control or by the nature of their characteristics. The categories of internal facilitator include the strength of a nurse, knowledge, and motivation. Under the strength of a nurse, the focus group shared experiences that made nurses be able to deal with stress and so be able to maintain their health (and healthy behaviors).

Functioning well under stress

Flo shared the amazing gift her friend who is a nurse has when she has to deal with stress at work by “turning (on) that part of the brain”. Although Flo does not have a clear explanation how it happens, she talked about her friend who “couldn’t be on time to save her life” but is able to “function amazingly when she is in a situation (at work).” Cali also talked about the innate strength of a nurse when dealing with crisis incidences on the floor. She simply explained it that “you either step up and you survive it and you do well in it or you don’t and those are the people who walk away from nursing.” Dottie shared how she functions differently at home than she does at work. She tried to explain that maybe she is “not as efficient at home ...because I have spent myself and I am so exhausted.” Similar to what Flo and Cali shared, Dottie commented how a “little kink” at work is not a tragedy but it may be at home. In other words, clearly, Dottie is able to function well under stress at work.

Building resilience

From the focus groups, Dottie and Rosie both talked about resilience or Ginnie talked about emotional stability that maintains nurses’ well-being. Dottie was the first to talk about the resilience that nurses possess... Dottie shared that “what I have seen over

the years...is that people (with resilience) come with baseline fundamental abilities as nurses, nurses that go on to be successful. And they can certainly nurture them and grow them.” Rosie basically echoed what Dottie said in her focus group when she shared that,

“You gotta stick with it to help kids and their families go through what they are going through because that is the process of helping them to get home again. ... I think doing this over the last few years and exposing myself made me feel more resilient and stronger and better capable of dealing with this sort of things. And when these problems arise with my family or be very ill, I can be a stronger figure in the group.”

In terms of building character, Ginnie added that nurses are “more emotionally stable.”

She shared that “hopefully, I feel like we are able to have empathy and like a lot of good qualities that is good for you not only at a physical level but also at spiritual level in a self-developmental way.”

Leaving work at work

In addition to the inner strength of a “strong” nurse, nurses shared their secret of leaving work at work that helps build the nurses’ character. Dottie having worked for over 30 years have observed the importance of separating yourself from work when your shift is done. She felt that the nurses needed to say that “I have completed my responsibilities here and I have to leave them and I have to purge myself and move onto the next phase like coming home from work to make breakfast or whatever it is.” Patty from another focus group would have agreed with Dottie. At work, Patty shared that when we see “a patient is dying...you take that with you. And when you go home, and you tell your family about it, they don’t understand it... (so) you leave it at the door.” Similarly, Maddie was adamant that you had to acquire the “ability to brush it off at the end of the day.” Maddie further shared that

“You gotta be able to manage your stress and let thing go at the door...You have to. You can’t take that home. Otherwise you are gonna find yourself with more stress, lack of sleep and improper eating habits.”

Strength of a nurse could be nurtured and developed or it may be an innate strength that she or he may possess as discussed above.

2l. Internal Facilitator: Knowledge

Good understanding

Through our nursing education, nurses have the knowledge about health. For Hilda, she felt that with this knowledge we are now “all aware of how to be healthy; what’s nutritious and what is good for you.” Aside from the knowledge described by Hilda, Jean felt that nurses should be “practicing what you are preaching.” By doing so, Jean talked about the likelihood of rising “your level (of health) to where you are.” practice what they preach. Simply stated, Rosie assumed the responsibility of health on the nurses – “I think we are more responsible for health in general since we have more knowledge.” And while working with sick patients, we obtain a deeper understanding of health and so, Kat felt that “seeing sick patients helps us want to be more healthy.”

2m. Internal Facilitator: Motivations

Within motivation, the last category of internal facilitator, two subcategories emerged including, learned behavior as a child and ready to change. Motivation comes from within or may be developed as a child as shared by the nurses.

Learned behavior as a child

The subcategory of learned behavior of a child talks about the benefit of learning to engage in healthy behaviors. Above, it was mentioned that if a child is not brought up eating 5 servings of fruits and vegetables, then they may struggle to engage in this

behavior as an adult. And so, the opposite was observed by Gene. He stated that “people who are more naturally more healthy, (it is) based on how they were brought up.” Gene talked about how having “their mom(s) make them eat servings of fruits and vegetable” aid them in “naturally enjoy(ing) the taste of fruits and vegetables.” With this learned behavior as a child, there is a natural motivation that comes from within the person.

Ready to change

There was a general agreement among the nurses that a person has to be ready to change. Hilda stated that there needs to be a “personal drive,” and similarly, Martha stated that “it depends on their level of motivation.” When talking about a co-worker who lost close to 150 pounds, Martha believed that “I want to say is that the reason she lost the weight was because she got motivated.” Both Ginnie and Gene shared the importance of coming from within whether they accept a challenge or make a choice. Ginnie talked about how nurses are “constantly taking care of other people.” She shared that it is up to the nurses to say “ok, now I need to take care of myself,” and that this is the “challenge as a nurse.” Gene also challenged the nurses, asking if she/he is “a person who is willing to sacrifice and go beyond and ... work toward being healthy.” For Gene, he once again used his race analogy about the choices we make and asked “are you gonna use bananas and apples and whole nuts to fuel you throughout the day or are you going to smoke or choose unhealthy food?” And so, Martha also felt that “if people really set their mind to it then they will be able to be healthier and heartier.”

3. Additional discussions

The focus group participants shared programs or made suggestions that helped or potentially aided in these discussions did not fall into the any of the themes/categories

that emerged during the analysis; however, they still provided valuable addition to our themes.

3a. Successful Programs

Biggest Loser program

Specific program such as the biggest loser program was mentioned several times at several different focus groups. Jean and Hilda both discussed how they have enjoyed competing in the biggest loser challenge as a unit. They discussed it as being fun and also being helpful doing it as a group. Hilda shared that she received support doing the program as a (hospital) unit and this support she may not get at home. Kat and co-workers on her unit have discussed doing the biggest loser program. Kat envisioned as Hilda mentioned, the support and encouragement you may receive from your co-workers, “Like a biggest loser type thing where everyone works together to manage health together and eat better, and exercise more – kind of encourage each other.”

Buddy system

Another form of de-stressing mentioned by the nurses was the buddy system or alone time. Cali shared that “if there is an opportunity, then we, (she and her buddy), walk off the unit during lunchtime and we go to the cafeteria, even if we brought our lunches.” For Cali, she felt that it is important to “go sit and not to be surrounded by (work).” Patty felt the same way that you needed to get away for “that moment when you can sit down and relax.” She further explained that “the job is so demanding that you just (needed to) take, just catch a breath for a moment.” And more importantly she suggested that “maybe you can talk about something else with your co-worker that is not related to your job.” Aside from de-stressing, a buddy system also was mentioned as a good social

support. Patty commented that on her unit, “(the buddy system) is unofficial but now that couple of the nurses on the night shift (is) trying to eat healthy, they will bring healthy snacks.” Kat felt that “you don’t need a big group, just one person” and then with that buddy, you “agree to do lunch together and bring your lunch instead of going to cafeteria to eat (the fast food options).” The buddy system may be a great facilitator to eating healthy and keeping oneself from engaging in poor health behaviors by decreasing stress.

3b. Suggestions

Access to healthy options

Access to healthy options may be considered as a response to the barrier subcategory of “poor food selection”. Kat suggested having carrot sticks instead of Oreos for snacks. Cali shared her appreciation to her manager “because in addition to the cookies, she does stock some bananas and apples.” Similarly in the ED, Martha shared that the administration office has “healthy foods (such as) dried almonds in smaller packs like this (pointing to the small pack of trail mix) and grapes out, yup, only healthy foods.” Martha only complaint, however, was that “it is only a little (amount) so it is gone in few minutes.” So, Gene suggested that as a unit, if everyone proactive and bring(s) in vegetables as a team (then) you can improve the health.” Ultimately, Ida expressed that “it would be nice to have a little bit more-healthier choices at night.”

Massage chair

The massage chair was mentioned at two different focus groups. At the first focus group, Maddie who works in the Emergency Department shared how she and her co-workers received 15 minutes chair massages. Maddie appreciated the massage chair as she described it as one of the “little things they (the department) have put in place show

us that this is a hard job.” For Rosie, on her unit, efforts were being made to purchase equipment for nurses to be used during lunch break to promote health. Although treadmill was their first choice, a massage chair ended up gracing their break room. Massage chair provides relaxation and may help de-stress the nurses.

Unit champions

Unit champions and committees were two subcategories that were discussed as ways for the unit to be pro-active in staff engaging in healthy behaviors. Dottie boasted that her nurse manager serves as their champion and supports healthy behaviors such as walking groups and yoga at night. Dottie further mentioned the importance of “trying to do it from within, realizing that that is where we are going to get the most support.” AS for Betty, she also believed for the “need (of) someone who will champion (and) it doesn’t have to be a supervisor who does it.” Hilda specifically identified the role of the “champion to facilitate (that) or get a group together” and she even suggested having multiple “champions that pool together.” She saw the champions motivating and encouraging the unit by “getting some ideas, writing them down and brainstorming.” For Hilda, unit champions had an important role of starting a “change of culture” on the unit.

Committees

It would be good for unit champions to have unit committees enforcing healthy behavior programs. Dottie shared that they have a “staff enhancement committee.” This committee provides multiple avenues to brighten and enhance the unit and the staff including “holding yoga classes at the middle of the night (by) push(ing) away all these tables and pull(ing) out our mats.” For Gene and Ginnie committees could be functional for the unit in engaging in healthy behaviors. Gene commented that the committee “can

make a unit vote and see how many want to make a healthy change.” As for Ginnie, she reported that they had committees but she envisioned them “doing things like promoting nurses’ health as part of their other duties.” According to the nurses, committees may be a facilitator for engaging in healthy behaviors.

Better communications

Nurses also felt that better communication would help in their engaging in healthy behaviors. Jean shared that she liked seeing on the computer screens, walking paths and how many miles the path is. She felt that having something visible like this may be helpful. She even suggested having posters encouraging staff to be healthy. Ginnie kept it simple but she suggested “advertising healthy stuff that’s going on or like just out tips, having healthy tips as well.” For Martha, she was specifically wanted “awareness to how unhealthy nurses are.” Martha shared that she doesn’t know “what the statistics are” for nurses. Providing more communication on health of a nurse, healthy tips and programs was the suggestion made by Martha, Ginnie, and Jean.

E. Comparison of Mixed Methods Data

From the focus group analysis, the several categories and several subcategories that emerged were also supported when looking at the correlates of nurses’ health promoting behaviors (HPBs).

Individual characteristics

Race and income comfort level all did not have any statistically significant relationships seen with the four health promoting behaviors nor were they discussed during the focus groups. Marital status was discussed during the focus group in reference to having too many responsibilities with children and husband that took them away from

conducting some of the healthy behaviors, however, during the survey analysis; marital status did not have any significant relationships with the four HPBs. There were, however, other individual characteristics that did have positive or negative relationships such as age.

Age had a negative relationship with maintaining a healthy BMI but the participants did not comment on age although years of experience were brought up briefly. During the focus groups, gender was discussed by only one focus group in reference to the care a male nurse may provide in comparison to a female nurse; but, no discussion was made in terms of their engaging in healthy behaviors. From the survey, however, gender had a statistically significant relationship with the smoking status of the nurse and their maintaining a healthy BMI range.

Nursing characteristics

Nurses' years of experience, similar to age, had a statistically significant negative relationship with maintaining a healthy BMI but years of experience was not discussed during the focus group. Instead, nurses talked about its relationship with the concept of hardiness but not to any of the four HPBs. As for the education level, there was a relationship noted between nurses without a bachelors or night degree having higher odds of consuming the daily recommended fruits and vegetables. Education level was not mentioned at all during the focus group; however, the nurses did talk about shift work. Rotating shifts or working the 12 hours were discussed at several of the focus groups as being a barrier to healthy eating and exercises. Unfortunately, in the survey analysis, no relationships were detected with the 4 HPBs.

Self-efficacy

Self-efficacy is the belief that he or she is capable of attaining the goal (Bandura, 1977). From the survey analysis, self-efficacy was positively seen that higher levels had higher odds of engaging in the recommended healthy eating and physical activity. During the focus group, the nurses talked about their health knowledge as being a barrier as well as a facilitator of engaging in the four HPBs, and they also talked nurses may be more likely to provide health education to their patients if they were engaging in HPBs themselves. However, there was no mention about nurses must having the belief in order for them to engage in the 4 HPBs.

Intention

Intention is defined by Swcharzer (2008) as a person's decision toward a behavior that includes their motivation toward that goal. During the focus group, several of the nurses identified intention or having the motivation to make changes, especially when a co-worker was trying to lose weight or when a co-worker wanted to quit smoking. In the logistic regression, even after controlling for demographics, higher level of intention was associated with lower odds of maintaining a healthy relationship and there was no relationship seen between intention and not smoking.

Social support

Social support was measured in several dimensions and from the sample, nurses reported receiving more social support from work than from families and friends. Social support at work was also a category that emerged during the focus group analysis. Social support is the only variable that had a strong positive relationship with 3 out of the 4 HPBs. At the focus groups subcategories such as accountability, empathy from co-

workers and the teamwork were formed from the discussions. For the nurses from the focus group, they felt that having accountability provided encouragement to exercise more and having teamwork at work perhaps helped nurses not eat unhealthy or go out smoking. Nurses also mentioned how empathy from co-worker's decreased the stress level at work.

Hardiness

Hardiness was a concept considered in the Health Action Process Approach (HAPA) model, (Figure 2) as a resource (or facilitator) for nurses in engaging in 4 HPBs. In the survey, nurses with higher level of hardiness were more likely to engage in healthy eating and physical activity, similar to self-efficacy. This relationship is supported from the focus group analysis as well. Hardiness emerged as a subcategory found under the strength of a nurse as an internal category of a facilitator. The nurses discussed the importance of functioning well under stress, building resilience, and leaving work at work. From the three subcategories, nurses discussed the innate nature of nurses to deal with stress and maintain emotional stability. In addition, the nurses talked about the strategy of separating work from your personal life so that you may take care of yourself and maintaining health. In the focus group there was no specific mention of how hardiness contributed to healthy eating and physical activity.

Work-related stress

As one of the concepts in the HAPA model, work-related stress was measured in the survey; and it also became a category that was formed from the focus group when the nurses discussed about caring for sick (and dying) patients, increased workload as a nurse, and constants changes that the nurses dealt with at work. Work-related stress did

not have any statistically significant relationships with any of the four health promoting behaviors; however, during the focus group, the nurses related to the high level of stress as contributing to engaging in unhealthy behaviors or “regressing into unhealthy habits.”

F. Summary of Findings

In chapter 4, the results from the analysis of data collected by two different methods (online survey and focus group) were shared. Referring back to the conceptual framework, the results of one or both of the quantitative and qualitative data supported some of relationships and did not support other relationships. From both the survey data and the focus group data, social support and hardiness had positive relationships with engaging in some of the healthy promoting behaviors (HPBs). Both shift work and work-related stress were not associated with the 4 HPBs in quantitative analysis but they were both discussed during the focus group as a barrier to engaging in healthy behaviors. In Chapter 5, the results are discussed more in detail and how the findings may contribute to the nursing science.

CHAPTER 5: DISCUSSIONS

The purpose of this study was to assess the prevalence of health promoting behaviors among nurses and to examine the barriers and facilitators to engaging in health promoting behaviors. Health promoting behaviors were defined as 1) having quit smoking or never having smoked; 2) engaging in at least 30 minutes of exercise 5 days a week; 3) consuming at least 5 servings of fruits and vegetables daily; and 4) maintaining their Body Mass Index (BMI) within healthy range. The independent variables, including barriers (work-related stress, shift work), facilitators (social support, hardiness), and other factors (self-efficacy, intention, planning and individual characteristics), were identified from the conceptual framework, Health Action Plan Approach (HAPA), and measured in a survey filled out by 236 bedside nurses (8.7% response rate) at a urban hospital setting. The independent variables were examined in their relationship with the dependent variables listed above and tested by using chi-squares, correlations, and a series of multiple logistical regression analyses. In addition, this study conducted 4 focus groups, where the participants were invited only from the survey participants who agreed to be contacted for further study. With a total N of 14 (12.7% response rate), content analysis was utilized on the transcribed focus group interviews and categories emerged to illustrate nurses' view on nurses engaging in health promoting behaviors. In this final chapter, discussions of the findings are presented as well as the nursing implications, the limitations of the study, and future research recommendations.

A. Discussions of Findings

The purpose of this study was to assess the prevalence of health promoting behaviors among nurses and to examine the barriers and facilitators to engaging in health

promoting behaviors. In the following section, we discuss the findings by each aim and then discuss implications for practice, policy, and research followed by strengths and limitations of the study.

Aim 1. Identify the prevalence of health promoting behaviors among nurses employed at an urban teaching hospital.

In this study, 8.6% of the study sample self-reported that they were current smokers, which is a lower percentage than the 10.7% prevalence of nurses in the Tobacco Use Population Surveys from 2006-2007, but still higher than the prevalence of physicians and pharmacists 2.31% and 3.25%, respectively (Sarna, Bialous, Sinha, Yan, & Wewers, 2010). The lower smoking rate may go hand in hand with the decreasing smoking rate among the young adults in the United States. For example, according to the National Health Interview Survey, from 2005 to 2011, there was a statistically significant decrease in smoking prevalence from 24.4% to 18.9% among adults aged between 18-24 years (CDC, 2012). In our survey, the number of younger nurses under 30 years of age represented 41.7% of the study sample which might have resulted in underestimation of smoking prevalence.

From the participants who filled out the survey and reported their height and weight, 18.5% fell into the category of being obese, a lower prevalence when compared to Nurses' Health Study 2 (NHS2). In the NHS2, the nurses in the US had 26.3% of obesity (Fair, Gulanick & Braun, 2009). Similarly, in the survey study of 760 nurses (Miller, Alpert, & Cross, 2008), 23.6% of the participants were obese. Once again, the age of our sample may have played a role in the lower percentage of nurses with obesity. Over 70% of the participants in our sample were aged 39 years and younger whereas the

nurses in Miller, Alpert and Cross' study (2008) had only 19% of their participants being 39 years old and younger.

The nurses in this sample (44.4%) had a higher prevalence of consuming at least 5 servings of fruit and vegetables than the 2009 national female consumption of 27.7% (Behavioral Risk Factor Surveillance System (BRFSS), 2009). The result might have been due, in part, to the way fruit and vegetable consumption was measured. We used the Health Promoting Lifestyle Profile (HPLP II) that had two separate items: "Eat 2-4 servings of fruit each day" and "Eat 3-5 servings of vegetables each day." The participants had a choice of answering, never, sometimes, often or routinely. Our participants were considered having eating healthy if they routinely or often ate 2-4 servings fruit each day and/or routinely or often ate 3-5 servings of vegetables each day. In contrast, BRFSS 2009 used series of questions asking how often the person consumed fruit juice, fruit, green salad, potatoes, carrots and other vegetables. It seems inappropriate to compare our nurses with the national sample from BRFSS when the measures differ. Compared with other studies, however, our sample had a similar prevalence compared to the 40% among nurses in England (Malik, Blake, and Batt 2011) compared to the 60% of nurses in Canada (Ratner & Sawatzky, 2009).

As for physical activity, nurses in our study (28.0%) had a lower prevalence when compared with the 2009 national female population (48.6%) (BRFSS, 2009^b). Different definitions of physical activity have been used in the literature, making direct comparisons across studies difficult. For example, in the BRFSS (2009^b), people who exercised moderately for at least 30minutes, 5 times a week as well as people who exercised vigorously for at least 20minutes 3 times a week were identified as those who

met the cutoff to be considered as being physically active. We followed the definition of physical activity by the U.S. Department of Health and Human Services (i.e., moderate exercise for at least 30minutes, 5 times per week) instead, that is consistent with other physical activity intervention reviewed by Nunan, Mahtani, Roberts, Heneghan (2013). In a study done by Malinauskiene, Leisyte, Romualdas, & Kirtiklyte (2011) used a question “how often in leisure time you have been physically active, no less than 30 minutes in the way that your breathing becomes hard and sweat appears”. In a sample of 748 nurses in Lithuania, Malinauskiene et al. (2011) used a question asking exercising more than 30 minutes weekly to identify nurses who were physically active; 42.5% of their sample reported exercising more than 30 minutes weekly. For future research, it would be important to use more standardized questions to identify prevalence of physical activity in order to ease cross-study comparisons.

Aim 2. Examine the factors influencing nurses’ adoption of the health promoting behaviors.

We used the Health Action Plan Approach framework to examine separately if there were relationship with the psycho-social variables found in the framework and the four health promoting behaviors. Specifically, we tested to determine whether nurses with higher self-efficacy would be more likely to engage in the selected health promoting behaviors (hypothesis 2.1). Self-efficacy was associated with fruit and vegetable consumption only: Nurses with higher level of self-efficacy were twice more likely to consume at least 5 servings of fruits and vegetables. There were no statistically significant relationships seen for the other three health promoting behaviors. There is substantial evidence on the role of self-efficacy in the general populations; where people

are likely to adopt healthy behaviors if they have a greater sense of self-efficacy (Bagozzi & Edwards, 1998; Gollwitzer & Oettingen, 1998). In a recent review of self-efficacy, Park and Gaffey (2007) concluded that self-efficacy is a “powerful determinant” in health behavior change. It is possible that using a scale to measure general self-efficacy might have decreased statistical power in capturing the relationship between each health promoting behavior specific self-efficacy and the health promoting behaviors. Future research is warranted to further elucidate the role of self-efficacy in nurses’ health promoting behaviors. Using separate self-efficacy questions salient to each health promoting behavior (Luszczynska and Haynes, 2002) may help maximize statistical power to capture correlations between self-efficacy and nurses’ health promoting behaviors.

We confirmed that if nurses reported that they had a plan, they were significantly more likely to engage in healthy eating, maintaining a healthy BMI, and being physically active (hypothesis 2.2). These findings are consistent with those reported in the literature (van Osch et al., 2009; Richert, Reuter, Wiedemann, Lippke, Ziegelmann, and Schwarzer, 2010). However, planning was not significantly correlated with non-smoking. A possible explanation may be that the majority of our sample (91.4%) was non smokers, and hence the variance was limited.

Intention was another theoretically selected psychosocial determinant of health promoting behavior among nurses. Specifically, we hypothesized that among employed nurses, those with higher intention would be more likely to engage in the key health promoting behaviors (hypothesis 2.3). We found that, a higher level of intention did not have a positive association with maintaining a healthy BMI, nor with the other three

health promoting behaviors; instead, the nurses were 50% less likely to maintain a healthy BMI with higher level of intention. A possible explanation might be potential measurement bias. The Cronbach's alpha reliability coefficient for the intention scale was 0.65, lower than the acceptable minimum cutoff of 0.70 (Renner & Schwarzer 2005).

As hypothesized, nurses with higher level of work-related stress were less likely to consume at least 5 servings of fruits and vegetable (hypothesis 2.4); however, work-related stress was not associated with the other three health promoting variables. To our knowledge, this was one of the first studies that specifically investigated the relationship between work-related stress and various types of health behaviors among nurses. We were able to document both quantitatively and qualitatively, that work stress actually influenced (negatively) nurses eating behavior. From the focus group, the nurses shared that their jobs were stressful and their stress level contributed to more unhealthy behaviors such as eating junk foods from the vending machines and more calories (Appendix L). Also from the focus group, it was lack of time, working late hours or being too tired than being stressed at work that prohibited them from engaging in healthy behaviors, which probably what we observed in our quantitative analysis.

While work-related stress has predominantly been studied in relation to nurses' risk behavior, previous studies have documented that work-related stress and poor work environment adversely affect nurses' health, putting them at increased risk for smoking (McKenna et al., 2003; Nakata et al., 2010) and suicide (Feskanich et al., 2002). Nonetheless, we did not observe any significant association between work-related stress and smoking, likely due to the fact that most of our sample were non smokers. Smoking has been associated with nurses having to do shift work (Nabe-Nielsen, Grade, Tuchsén,

Hogh & Diderichsen 2008) but in our sample, the shift work also did not have any statistically significant correlations with smoking. In our analysis, we noted that older nurses were associated with smoking status, and so, with our sample being a younger, this may explain why shift work did not have any association with smoking.

From the theoretically selected variables that potentially influence nurses' health-promoting behaviors, social support at work emerged as a strong correlate of not smoking and maintaining a healthy BMI (hypothesis 2.5). Specifically, nurses with higher level of social support were 6 times more likely not to smoke and 2 times more likely to keep a healthy BMI. There were no statistically significant relationships seen for the other 2 health promoting variables. The result is partly consistent with that of previous studies in which social support was a predictor of health promoting behaviors (e.g., physical activity) in general populations (McDonald et al., 2002; McNicholas, 2002). Social support as a protective resource in the presence of stress is well documented (Rose et al., 2006; Browner et al., 1987; Harris & Rose, 2002; LaRocco et al., 1980). Given our finding, social support enhancing intervention programs may be a promising avenue to consider in promoting nurses' health. In this study, we measured only the social support found at work. It is possible that a different social support scale that included family and friends may have shown positive relationships with consuming healthy eating and physical activity. Further research is needed to assess how different types of social support influence nurses health behavior and outcomes.

Hardiness was statistically significantly associated with consuming at least 5 servings of fruits and vegetables and exercising 30 minutes 5 times a week (hypothesis 2.6) but not with the other two variables. Given the lack of similar studies that looked at

the role of hardiness in relation to nurses' health promoting behavior, it is difficult for us to compare the finding with that of previous studies. Nonetheless, existing evidence supports the role of hardiness as a protective factor against nurses' work stress and burnout and adverse mental health outcomes (Larrabee et al, 2003; Boyle, et al., 1991; Costantini et al., 1997; Natvik et al., 2011). In the focus group, hardiness also emerged as a facilitator for engaging in health promoting behaviors. In order to deal with stress at work, nurses shared the importance of building or having this trait of hardiness to avoid "bad behaviors" such as going to the vending machines. It would be of interest to explore if hardiness or a facet of hardiness is special to nurses.

Aim 3. Explore expectations and cultural norms associated with engaging in health promoting behaviors among nurses.

From the focus group interviews, barriers and facilitators were further explored and what works for nurses to engage in health promoting behaviors also discussed. Work-related stress and shift work were defined as barriers in the HAPA framework. Although stress and shift work did come up as themes as barriers in the focus group interviews, the participants were also able to expound on other possible barriers for nurses not engaging in health promoting behaviors.

Some of the barriers to physical activity shared by our focus group were similar to the top three barriers identified by the nurses in England: "I don't have time;" "I'm too tired;" and "I have no motivation" (Malik, Blake & Batt, 2011). In addition, our nurses shared that it is too late to be physically active when you get home from a 12 hour shift day. Although, our focus group did not specifically say that they lacked motivation, they did have excuses as to why they did not have to be physically active. The nurses shared

how they are physically moving at work and so they did not feel that they needed to exercise once you are at home. Working the 12 hour shifts, the nurses identified lack of time and being too tired to go shopping for food as excuses for consuming at least 5 servings of fruits and vegetables a day. These excuses can be considered as barriers as seen in our HAPA framework that are preventing a person from eating healthy.

An interesting discussion was made on the altruistic characteristics of nurses or nurses' compassion as they care for other (patients and co-workers) before themselves that also carries over to home. Nurses agreed that they have a "save the world" mentality and they are willing to make sacrifices. The nurses shared that they do not take breaks and they are many times busy helping other nurses, and unfortunately, this may lead to fatigue and burnout as shown in previous research (Neville & Cole 2013; Laschinger & Grau 2012; Harwood, Ridley, Wilson, Laschinger 2010).

As discussed above, from the data survey, social support is associated with healthy behaviors. Our focus group was able to further explain how social support assists them in healthy behaviors in the form of accountability, empathy, teamwork and second family. Nurses commented that they spend much time at work, and so, their co-workers are considered as their "second family" and many times, their accountability partner with their eating and trying to lose weight. Also in the focus group, the nurses discussed empathy and teamwork in relation to stress. Being able to talk to a fellow co-worker and having help from co-workers with a busy patient, the nurses from the focus group felt that this forms of social support assisted in decreasing their stress level and in turn a decrease in engaging in poor health behaviors. Our finding underscores the importance of incorporating social support when developing health promotion programs for nurses.

A nurse shared how her co-worker was unable to quit smoking despite the encouragement of her co-workers. It wasn't until she wanted to quit, the co-workers could provide accountability and support. As in the HAPA framework (Schwarzer 1992, 2008), without the motivation/intent from the person, social support alone does not lead the person to behavior change. Other successful facilitators include making the hospital a smoke-free facility. Despite not having any current smokers among the focus group participants, nurses observed that fewer smokers were going out to smoke. In this case, the environment where they worked ended up being a facilitator to nonsmoking. The hospital moving the smoke free zone further away from the building deters smokers to going out. Fichtenberg and Glantz (2002) conducted a systematic review of 26 studies about smoke-free workplaces and found a 3.8% reduced prevalence of smoking as a result of smoke-free policy.

Though focus groups, we were able to explore how hardiness or resilience influenced nurses under the theme of "strength of a nurse". Once again, hardiness served as a protective measure to dealing with stress at work. Some of the nurses felt that hardiness/resilience was something a nurse has and those who do not have it, do not last long in nursing (Appendix L). However, there were other nurses who shared that they were able to grow stronger (build resilience) as they matured in their nursing career. It is evident that hardiness may be a worthwhile concept to explore further, especially in relation to future intervention programs to improve nurses' health.

Successful programs and suggestions emerged from the focus group interviews. Programs such as the Biggest Loser Program and the buddy system were shared at several of the focus groups. Both of these programs have a component of accountability

and the social support, facilitators as identified by the nurses. In additions, there were various suggestions that were shared by the nurses including providing an environment with healthier options. The nurses voiced their concern that their units often used unhealthy foods (i.e. pastries, pizza) as rewards as well as a lack of access to healthy foods. They felt that there had limited places to buy healthy and affordable foods or the vending machines lacked the healthy options. Providing more healthy options may be beneficial not only to the nurses but also to other employees. Some of the nurses felt that nurses engaging in health promoting behaviors would be more likely to educate their patients on living a healthy lifestyle. Therefore, nurses wanted to be encouraged to be living a healthy lifestyle and so, the nurses shared that they wanted more communication on the poor health behaviors of the nurses. Despite having knowledge on health, they expressed a need for health information to be shared at their workplace.

B. Implications

Practice

The findings from this study can help to guide hospitals with their efforts in promoting healthy lifestyles with nurses. Knowing that nurses with higher level of social support at work were significantly more likely to be eating healthy and exercising regularly, hospitals may want to develop programs that require social support from their colleagues and managers when targeting health promoting behaviors. For example, it was noted by the focus group participants that the Biggest Loser Program was a successful program among the nurses at the study hospital. Having the social support at work provided accountability which in turn provided the encouragement for the nurses to select healthier food selections at work. Having teamwork at work also helped nurses not eat

unhealthy or go out smoking. In addition, nurses who stated that they had a plan to make a change were more likely to be engaging in healthy behaviors and so, providing programs as indicated above are crucial. However, programs rarely assess if a person is ready to change. This often is a fatal flaw of unsuccessful behavior changes. Based on the HAPA framework (Schwarzer 1992, 2008), we found that self-efficacy and intention are important variables along with planning. Programs aiming to improve nurses' health behaviors should include an assessment of a nurse's readiness to change prior to their participation. Lastly, something to consider is the statistically significant association between smoking and the male nurses. There should be more efforts focusing on the male nurses and smoking cessations.

Policy

For the sake of promoting healthy lifestyles, the nursing profession may want to consider going back to 8-hour shifts from the 12-hour shifts. Based on our findings from the focus group, there were lengthy discussions on how the 12-hour shifts served as a big barrier to healthy eating and exercise. Keller (2009) conducted a literature review and discussed the increased fatigue, presenteeism, and healthcare errors associated with the 12-hour shifts. Despite the benefit of 12-hour shifts on continuous patient care, nursing needs to focus on the benefits of 8-hour shifts for their own health.

Research

In this study, social support at work had a high correlation with healthy behaviors for nurses. Although there is much literature on social support and its positive impact on decreasing work-related stress for nurses (Baruch-Feldman, Brondolo, Ben-Dayana & Schwarz, 2002; Carlson & Perrewé, 1999; Schaufeli & Greenglass, 2001); there is not

much literature on social support at work specifically found regarding its impact on healthy lifestyle factors for nurses. Randomized controlled trials with specific worksite interventions for nurses with a social support component need to be tested for its benefit as a next logical step for future research.

Further research is warranted to understand the impact of hardiness on nurses' health behavior. Since nurses with higher level of hardiness were more likely to engage in healthy eating and recommended physical activity, more research would be needed to see explore if hardiness is a unique trait of nurses. From the focus group interviews, the nurses identified hardiness/resilience as a special trait that helps them to deal with the stress from work. Other nurses identified hardiness as a quality of resilience that helps nurses "go on to be successful" (Appendix L). More research needs to be done to understand what makes nurses resilient and if that is something that can be taught early in the nursing career. Also, developing a hardiness measure geared toward nurses may address unique qualities of nurses that are associated with hardiness.

C. Strengths and Limitations

Limitations

A number of limitations should be noted. First, we used a convenience sampling from one study site. A more rigorous method would have been random sampling across different institutions, however, due to time and resource restraints, it was offered to the nurses at one large-scale institution located in an urban area of Baltimore. Therefore, the results may not be generalizable to the nurses at community or smaller institutions. In addition, there might have been a social desirability bias. This survey was focusing on nurses' health and so the nurses may have provided data that should reflect the expected

behaviors of nurses. To decrease social desirability, the survey was kept anonymous. Other biases include the potential sampling bias associated with the convenience sampling. Our study sample had 4 times the number of younger nurses under 30 years of age and included more nurses with bachelor's degree than the 2008 national sample survey (Health Resource and Service Administration, 2008). From a literature review conducted by Ahern (2005), online surveys are taken by younger and more educated people which may limit the generalizability of our findings. If we had offered a paper-version of the survey, it is possible that more "older" nurses may have filled out the surveys.

Another limitation is the low return rate. Efforts were made to follow the Dillman's method of different ways to invite participation; placing flyers in their mailboxes and asking nurse managers to send out email announcements with the endorsement of the VP of nursing. However, additional efforts could have been made by attending staff meetings and passing out paper-version of the survey for those who did not want the trouble of going on the internet.

Some of the measures used in the study could have been strengthened. In social science, usually the acceptable level of reliability of Chronbach's alpha reliability coefficient is 0.70 (Gliem & Gliem 2003). Though most study instruments yielded more desirable level of Chronbach's alpha of 0.80, the intention scale (Chronbach's alpha = 0.65) did not meet this cut off. In addition, height and weight were self-reported. It is possible that BMIs might have been underestimated in the sample. However, studies have documented that self-reported BMIs are highly correlated with those objectively measured (Spencer, Appleby, Davey & Key 2002; McAdams, Van Dam & Hu 2007).

Strengths

One of the strengths of this study was the mixed-methods we used to enrich the data. The survey data was collected first and analyzed so that the results may guide the questions asked in the second phase of the study involving focus groups. Benefit of a mixed-methods study is the synergism between the quantitative and qualitative data providing a greater depth in the interpretation than if explaining each data alone. Also, the mixed-method design increased the validity of the results of the study (Polit & Beck, 2008; Tashakkori & Teddlie, 2003). Because of the mixed-methods study design employed in the study, we were able to obtain richer data to further explain some of most salient findings (e.g., how social support was received at work). While a number of potential biases were noted in relation to our convenience sampling, it is important to note that this study, when compared to the 2008 National Sample Survey of Registered Nurses (Health Resource and Service Administration, 2008), included more nurses from diverse race/ethnicity backgrounds. Percentages of nurses representing Blacks (10.5%) and Asians (10.5%) were twice the percentages of black nurses (5.4%) and Asian nurses (5.5%) in the national sample survey.

Finally, the selection of study variables was based on a valid theoretical framework, HAPA. Using a theoretical or conceptual framework helps provide a structure to the research design and methods and also guides in testing of the hypotheses based on the framework (Mock et al. 2007). As a result, HAPA framework was valuable in comprehensively looking at well defined study variables in relation to nurses' health promoting behaviors that may be replicated in future research.

D. Summary

The importance of nurses focusing on their own health has been emphasized in this study. Having knowledge on the benefits of healthy behaviors on chronic diseases does not dictate a person to engage in them. Instead we looked at the HAPA framework, and saw that the different resources the nurses had such as social support at work or hardiness, the more likely they were to engage in healthy lifestyle. This is also true for nurses with the intention to make a change as well as having a plan. The findings from the survey and the focus group identified several areas where the hospital administrations may assist the nurses in engaging and maintaining a healthy lifestyle. As a profession, nurses must take care of their own health so that they may be more likely to provide education on healthy behaviors to their patients as well as stay in the nursing career longer. Nursing will always be vital to the health care system and it is imperative that we start focusing more on nurses' health and developing practical strategies to improve it.

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Appendix A: IRB Approval Letter for Survey Data Collection



Office of Human Subjects Research Institutional Review Boards

1620 McElderry Street, Reed Hall, Suite B-130
Baltimore, Maryland 21205-1911
410-955-3008
410-955-4367 Fax
e-mail: jhmrb@jhmi.edu

Date: November 12, 2012

NEW APPLICATION APPROVAL

Review Type: Expedited
PI Name: Hae Ra Han
Study #: NA_00076097
Study Name: BARRIERS AND FACILITATORS TO ENGAGING IN HEALTH PROMOTING BEHAVIORS AMONG NURSES
Committee Chair: Susan Bassett
Committee: JHM-IRB X

Date of review: November 8, 2012

Date of approval: November 8, 2012

Date of expiration: November 7, 2013

The JHM IRB approved the above-referenced New Application.

Date of Approval and Expiration Date: The approval and expiration date for this research are listed above. If the approval lapses, the research must stop and you must submit a request to the IRB to determine whether it is in the best interests of individual participants to continue with treatment interventions.

Changes in Research: All proposed changes to the research must be submitted using an eIRB Change in Research application. The changes must be approved by the JHM IRB prior to implementation, with the following exception: changes made to eliminate apparent immediate hazards to participants may be made immediately, and promptly reported to the JHM IRB.

Continuing Review: Continuing Review Applications should be submitted at least 6 weeks prior to the study expiration date. Failure to allow sufficient time for review may result in a lapse of approval. If the Continuing Review Application is not submitted prior to the expiration date, your study will be terminated and a New Application must be submitted to reinstate the research.

Unanticipated Problems: You must inform the IRB of any unanticipated problems involving risks to participants or others.

If this research has a commercial sponsor, the research may not start until the sponsor and JHU have signed a contract.

Study documents:

Recruitment Materials:

Flyer
FINAL_Han_NA76097_Cover Letter_11082012_NOLOGO.docx

HIPAA Form 3:
HIPAA Form 3

Additional Supplemental Study Documents:
Survey without DOB

eFormA:
eForm A

Study Team Members:
Hwayun Lee

The Johns Hopkins Institutions operates under multiple Federal-Wide Assurances: The Johns Hopkins University School of Medicine - FWA00005752, The Johns Hopkins University School of Nursing - FWA00006088, The Johns Hopkins Hospital and Johns Hopkins Health Systems - FWA00006087, Johns Hopkins Bayview Medical Center - FWA00006089, Howard County General Hospital - FWA00005743, Hugo W. Moser Research Institute at Kennedy Krieger, Inc. - FWA00005719, Johns Hopkins Community Physicians - FWA00002251, Suburban Hospital and Health System - FWA00005924

<https://e-irb.jhmi.edu/eirb/Doc/0/7GJ3D81N3DR4B2G53C1Q8U5VA7/fromString.html>[6/25/2013 5:40:50 PM]

Appendix B: Consent for Web-Based Survey

Dear Colleague:

We invite you to participate in this research study titled, *The Barriers and Facilitators to Engaging in Health Promoting Behaviors among Nurses*. This study seeks to understand why nurses may or may not be engaging in health promoting behaviors such as exercising regularly for at least 30 minutes, 5 times a week or consuming 5 servings of fruits or vegetables daily.

The survey will take up to 10-25 minutes to complete and is completely voluntary. Your responses will be confidential but you may choose not to answer. The benefit of your participation is your contribution in identifying the barriers to health practices among nurses. The findings from this study may ultimately be used to create a healthier workforce. Group results will be made available to Johns Hopkins Hospital and may be used to support Magnet Designation. If desired, the findings of the study can be made available to you.

After you complete the survey, you will be asked if you want your name to be entered into a drawing for prizes including iPads, Kindle Fires, and Kindle e-Readers. Your name and contact information will be separated from the rest of the survey. Once the prizes are drawn, the list of names obtained from the database will be destroyed.

If you would like further information regarding your rights as a research subject, please contact the Johns Hopkins University's Institutional Review Board at IRB@JHU.edu. The principal investigators for this research study, #NA_00076097, are Dr. Hae Ra Han and Ms. Hwayun Lee at the Johns Hopkins University School of Nursing. They may be contacted at (410) 530-2670 or at hlee43@jhmi.edu.

Please note that your completion of this survey will serve as your consent to be in this research study.

Appendix C: Support Letter from Vice President of Nursing

Karen B. Haller, Ph.D., R.N.
Vice President

Nursing and Patient Care Services
600 North Wolfe Street / Billings Administration
107
Baltimore, MD 21287-1607
410-955-4222 T
410-614-0694 F
khaller@jhmi.edu



December 1, 2012

Dear Colleagues,

Research has shown that engaging in health-promoting behaviors across all four key areas (diet, exercise, smoking, and weight control) decreases the risk of developing chronic disease by 78%; and nurses who practice these healthy behaviors are more likely to provide education on prevention to their patients. In addition, nurses who rated their health good tended to stay longer in their jobs than those who rated their health poor.

Hwayun Lee, a doctoral student at Johns Hopkins University Graduate School of Nursing, is conducting a study to understand why nurses are, or are not, engaging in health-promoting behaviors.

At The Johns Hopkins Hospital, we value the health and well being of our nurses and want to foster an environment where nurses' health is as important as our patients' health.

I encourage you to participate in this study by completing the anonymous web-based survey. Look for the flyers on your unit and give yourself the gift of time to participate.

Hwayun will share her findings with us to further our efforts to develop self-care and health-promoting programs for ourselves and our staff.

Sincerely,

A handwritten signature in black ink that reads "Karen Haller".

Karen Haller, PhD, RN (khaller@jhmi.edu)



Appendix D: Approved Flyers

NURSE HEALTH BEHAVIORS STUDY

- What:** ■ Research study examining the barriers and facilitators to engaging in health promoting behaviors among nurses
- Who:** ■ Hopkins bedside RNs
■ Worked at least 6 months
- Why participate:** ■ Understand why nurses are or are not engaging in health promoting behaviors
- How:** ■ Anonymous & secured web-based survey
■ 10-20 minutes to complete
<http://tinyurl.com/nursehealthbehaviors>
- Compensation:** ■ Entered into a drawing for prizes
(2-IPads, 2-Kindle Fires, 4Kindle e-Readers)
- Contact:** ■ For any questions or more information, contact Hwayun Lee at hlee43@jhmi.edu

Principal Investigator: Hae-Ra Han, RN, PhD
Johns Hopkins University School of Nursing
JHMI eIRB# NA_00076097

Appendix E: IRB Approval Letter for Focus Group



Office of Human Subjects Research Institutional Review Boards

1620 McElderry Street, Reed Hall, Suite B-130
Baltimore, Maryland 21205-1911
410-955-3008
410-955-4367 Fax
e-mail: jhmrb@jhmi.edu

Date: February 20, 2013

NEW APPLICATION APPROVAL

Review Type: Expedited
PI Name: Hae Ra Han
Study #: NA_00081995
Study Name: Facilitators and Barriers to Engaging in Health promoting Behaviors Among Nurses - Part 2
Committee Chair: Susan Bassett
Committee: JHM-IRB X

Date of review: February 7, 2013

Date of approval: February 7, 2013

Date of expiration: February 6, 2014

The JHM IRB approved the above-referenced New Application.

Date of Approval and Expiration Date: The approval and expiration date for this research are listed above. If the approval lapses, the research must stop and you must submit a request to the IRB to determine whether it is in the best interests of individual participants to continue with treatment interventions.

Changes in Research: All proposed changes to the research must be submitted using an eIRB Change in Research application. The changes must be approved by the JHM IRB prior to implementation, with the following exception: changes made to eliminate apparent immediate hazards to participants may be made immediately, and promptly reported to the JHM IRB.

Continuing Review: Continuing Review Applications should be submitted at least 6 weeks prior to the study expiration date. Failure to allow sufficient time for review may result in a lapse of approval. If the Continuing Review Application is not submitted prior to the expiration date, your study will be terminated and a New Application must be submitted to reinstate the research.

Unanticipated Problems: You must inform the IRB of any unanticipated problems involving risks to participants or others.

If this research has a commercial sponsor, the research may not start until the sponsor and JHU have signed a contract.

Study documents:

Written Consent:

Only consent forms with a valid approval stamp may be presented to participants. All consent forms signed by subjects enrolled in the study should be retained on file. The Office of Human Subjects Research conducts periodic compliance monitoring of protocol records, and consent documentation is part of such monitoring.
FINAL_Han NA_00081995 ConsentForm_020713 NoLogo.doc

Recruitment Materials:

FINAL_Han NA_00081995 Telephone Script for Focus Group_020713 NoLogo.docx

Additional Supplemental Study Documents:

Focus Group Guidelines.docx

eFormA:

eformA 01_17_13.doc

Study Team Members:

Hwayun Lee

The Johns Hopkins Institutions operates under multiple Federal-Wide Assurances: The Johns Hopkins University School of Medicine - FWA00005752, The Johns Hopkins University School of Nursing - FWA00006088, The Johns Hopkins Hospital and Johns Hopkins Health Systems - FWA00006087, Johns Hopkins Bayview Medical Center -

<https://e-irb.jhm.edu/eirb/Doc/0/Q9CP9M2QSU04H3KOTHJETS2U76/fromString.html>[6/25/2013 5:41:46 PM]

Appendix F: E-mail Script for Participating in the Focus Group

E-mail Script for Participation in Focus Group

Hello, my name is Hwayun and I am following up from the Nurse Health Behavior Study that Dr. Hae Ra Han is the principal investigator. It is JHMI IRB approved and the study number is NA_00081995.

You indicated that you would like to participate in our focus group that may last for 2 hours. The following are dates and times when the focus groups will be held. If you can attend one of the focus groups we have established, please send me an email back stating your interest. There will be a \$50 compensation for your participating in the focus group; however, you may still decline to participate in the focus group at any time. I will give you a reminder call one day prior to the focus group.

Appendix G: Consent Form for Focus Groups

RESEARCH PARTICIPANT INFORMED CONSENT AND PRIVACY AUTHORIZATION FORM

Protocol Title: Barriers and Facilitators of Health promoting Behaviors among Nurses

Application No.: NA_00081995

Principal Investigator: Hae-Ra Han, RN, PhD, FAAN
525 N. Wolfe St. Room 526
Baltimore, MD 21205-2110
Tel) 410-614-2669
Fax) 410-203-2685

1. What you should know about this study:

- You are being asked to join a research study.
- This consent form explains the research study and your part in the study.
- Please read it carefully and take as much time as you need.
- Please ask questions at any time about anything you do not understand.
- You are a volunteer. If you join the study, you can change your mind later. You can decide not to take part or you can quit at any time. There will be no penalty or loss of benefits if you decide to quit the study.
- During the study, we will tell you if we learn any new information that might affect whether you wish to continue to be in the study.
- Ask your study team to explain any words or information in this informed consent that you do not understand.

2. Why is this research being done?

This research is being done to understand the barriers and facilitators for nurses to engage in health promoting behaviors (i.e. engaging in regular physical activity; 5 servings of fruits and vegetables; non-smoking & maintaining healthy weight).

Nurses have the opportunity to educate their patients on engaging in health promoting behaviors; but if nurses do not engage in these behaviors, they are less likely to provide the education.

Nurses who is employed at Johns Hopkins Hospital as a registered nurses (part time or full time) for at least 6 months or greater are eligible to join.

How many people will be in this study?

About 24 people will be asked to take part in this study.

3. What will happen if you join this study?

If you agree to be in this study, we will ask you to do the following things:

- You will participate in a focus group with about 6-8 other participants.
- During the focus group, the researcher will ask you specific question using a guided question set.
- There are no right or wrong answers to the questions.
- You are asked to share your thoughts and experience only if you are comfortable.
- The group discussion will be audio recorded but your name will not be used.

How long will you be in the study?

The focus group will take around 2 hours. We will provide light refreshment.

4. What are the risks or discomforts of the study?

You may get tired or bored when we are asking questions or during the discussion. If there are any items you do not wish to answer, you do not have to answer them.

There is the risk that information about you may become known to people outside this study or focus group. To protect against this, extra measures will be taken to protect each participant's confidentiality.

We will begin the focus group by asking the participants to agree to the importance of keeping information discussed in the focus group confidential. In addition, we will ask each participant to verbally agree to keep everything discussed in the room confidential, and will remind them at the end of the group not to discuss the material outside.

You will be assigned a code and you will introduce yourself by the assigned pseudo name. An observer who takes notes will only refer to you with your assigned pseudo name. A code sheet, linking your name with a code will be kept in a secure location so that people other than the researchers do not have access to it. Your transcribed responses will be kept in a secure network location. After the study is completed the code sheet will be destroyed, and data will be identifiable only by study code.

5. Are there benefits to being in the study?

There is no direct benefit to you from being in this study. If you take part in this study, you may help others in the future. Your taking part in this study will aid in understanding nurses' health behavior and developing specific intervention to improve the health of nurses.

6. What are your options if you do not want to be in the study?

You do not have to join this study. If you do not join, your employment at Johns Hopkins will not be affected.

7. Will it cost you anything to be in this study?

No.

8. Will you be paid if you join this study?

There is a payment of \$50 after you have completed the focus group. If you participate for part of the focus group, then you will be compensated with a payment of \$25. You may be required to provide your Social Security number to be paid.

9. Can you leave the study early?

- You can agree to be in the study now and change your mind later.
- If you wish to stop, please tell us right away.
- Leaving this study early will not affect your employment at Johns Hopkins.
- If you leave the study early, Johns Hopkins may use or give out your health information that it already has if the information is needed for this study or any follow-up activities.

10. How will your privacy be protected?

Johns Hopkins has rules to protect information about you. Federal and state laws also protect your privacy.

The research team working on the study will collect information about you. This includes things learned from the procedures described in this consent form. They may also collect other information including your name, address, date of birth, and other details.

Generally, only people on the research team will know your identity and that you are in the research study. However, sometimes other people at Johns Hopkins may see or give out your information. These include people who review research studies, their staff, lawyers, or other Johns Hopkins staff.

People outside of Johns Hopkins may need to see your information for this study. Examples include government groups (such as the Food and Drug Administration), safety monitors, other hospitals in the study and companies that sponsor the study.

We cannot do this study without your permission to use and give out your information. You do not have to give us this permission. If you do not, then you may not join this study.

We will use and disclose your information only as described in this form and in our Notice of Privacy Practices; however, people outside Hopkins who receive your information may not be covered by this promise. We try to make sure that everyone who needs to see your information keeps it confidential – but we cannot guarantee this.

The use and disclosure of your information has no time limit. You may cancel your permission to use and disclose your information at any time by notifying the Principal Investigator of this study by phone or in writing. If you contact the Principal Investigator by phone, you must follow-up with a written request that includes the study number and your contact information. The Principal Investigator's name, address, phone and fax information are on page one of this consent form.

If you do cancel your permission to use and disclose your information, your part in this study will end and no further information about you will be collected. Your cancellation would not affect information already collected in the study.

11. What other things should you know about this research study?

a. What is the Institutional Review Board (IRB) and how does it protect you?

The Johns Hopkins Medicine IRB is made up of:

- Doctors
- Nurses
- Ethicists
- Non-scientists
- and people from the local community.

The IRB reviews human research studies. It protects the rights and welfare of the people taking part in those studies. You may contact the IRB if you have questions about your rights as a participant or if you think you have not been treated fairly. The IRB office number is 410-955-3008. You may also call this number for other questions, concerns or complaints about the research.

b. What do you do if you have questions about the study?

Call the principal investigator, Dr. Hae-Ra Han at 410-614-2669. If you wish, you may contact the principal investigator by letter or by fax. The address and fax number are on page one of this consent form. If you cannot reach the principal investigator or wish to talk to someone else, call the IRB office at 410-955-3008.

c. What happens to Data that are collected in the study?

Scientists at Johns Hopkins work to find the causes and cures of disease. The data collected from you during this study are important to both this study and to future research.

If you join this study:

- You will not own the data given by you to the investigators for this research.
- Both Johns Hopkins and any sponsor of this research may study your data collected from you.
- If data are in a form that identifies you, Johns Hopkins may use them for future research only with your consent or IRB approval.
- If data are in a form that we believe does not identify you, they may be shared with other academic medical centers, non-profit organizations, corporate sponsors and other commercial companies without your consent or IRB approval.
- You will not own any product or idea created by the researchers working on this study.
- You will not receive any financial benefit from the creation, use or sale of such a product or idea

d. What are the Organizations that are part of Johns Hopkins?

Johns Hopkins includes the following:

- The Johns Hopkins University
- The Johns Hopkins Hospital
- Johns Hopkins Bayview Medical Center
- Howard County General Hospital
- Johns Hopkins Community Physicians.
- Suburban Hospital
- Sibley Memorial Hospital

12. What does your signature on this consent form mean?

Your signature on this form means that:

- you understand the information given to you in this form
- you accept the provisions in the form
- you agree to join the study

You will not give up any legal rights by signing this consent form.

WE WILL GIVE YOU A COPY OF THIS SIGNED AND DATED CONSENT FORM

Signature of Participant	Date/Time
--------------------------	-----------

Signature of Person Obtaining Consent	Date/Time
---------------------------------------	-----------

NOTE: A COPY OF THE SIGNED, DATED CONSENT FORM MUST BE KEPT BY THE PRINCIPAL INVESTIGATOR; A COPY MUST BE GIVEN TO THE PARTICIPANT; AND, IF APPROPRIATE A COPY OF THE CONSENT FORM MUST BE PLACED IN THE PARTICIPANT'S MEDICAL RECORD

ONLY CONSENT FORMS THAT INCLUDE THE JOHNS HOPKINS MEDICINE LOGO CAN BE USED FOR CONSENTING RESEARCH PARTICIPANTS. IF THIS CONSENT FORM DOES NOT HAVE A JOHNS HOPKINS MEDICINE LOGO, DO NOT USE IT TO CONSENT RESEARCH PARTICIPANTS.

Appendix H: Pseudo Names

PSEUDO NAMES: NURSE THEORIST - THEORY

FLO: Florence Nightingale - Environment theory

HILDA: Hildegard Peplau - Interpersonal theory

GINNIE: Virginia Henderson - Need Theory

KAT: Katharine Kolcaba - Comfort Theory

ROSIE: Rosemarie Rizzo Parse Human Becoming Theory

IDA: Ida Jean Orlando - Nursing Process theory

MARTHA: Martha Rogers -Unitary Human beings

DOTTIE: Dorothea Orem - Self-care theory

GENE: Imogene King - Goal Attainment theory

BETTY: Betty Neuman - System model

CALI: Sister Calista Roy - Adaptation theory

JEAN: Jean Watson - Philosophy and Caring Model

MADDIE: Madeleine Leininger -Transcultural nursing

PATTY: Patricia Benner - From Novice to Expert

Appendix I: Demographic Information Sheet for Focus Group

Study Title: Barriers and Facilitators of Engaging in Health Promoting Behaviors Among Nurses: Part 2
Application No: NA_00081995

What is your nursing educational background?

- | | |
|---|--|
| <input type="checkbox"/> 01 ASN/ADN | <input type="checkbox"/> 02 Diploma |
| <input type="checkbox"/> 03 BSN | <input type="checkbox"/> 04 Masters |
| <input type="checkbox"/> 05 PhD/DNS/DNP | <input type="checkbox"/> 06 Other: _____ |

How many years of nursing experience do you have?

- | | |
|--|---|
| <input type="checkbox"/> 01 less than 1 year | <input type="checkbox"/> 02 1 year to less than 3 years |
| <input type="checkbox"/> 03 3 years to less than 5 years | <input type="checkbox"/> 04 5 years to less than 10 yrs |
| <input type="checkbox"/> 05 10 years to less than 20 years | <input type="checkbox"/> 06 20 years or more years |

What unit do you mainly work on?

- ☐ 01 Adult Emergency Medicine
- ☐ 02 Critical Care
- ☐ 03 GYN/OB
- ☐ 04 Medicine
- ☐ 05 Neurosurgery & Neurology
- ☐ 06 Oncology
- ☐ 07 Ophthalmology
- ☐ 08 Outpatient
- ☐ 09 Pediatrics
- ☐ 10 Psychiatry
- ☐ 11 Radiology
- ☐ 12 Rehabilitation
- ☐ 13 Surgery
- ☐ 14 Other _____

Which shift do you mostly work?

- | | |
|---|---|
| <input type="checkbox"/> 01 Day shifts / A shifts | <input type="checkbox"/> 02 Evening shifts |
| <input type="checkbox"/> 03 Night shifts / P shifts | <input type="checkbox"/> 04 Rotating shifts |

What is your current age: _____

What is your current weight (in pounds)? _____

What is your current height (in feet and inches)? _____feet/_____inches

Have you ever or currently smoke cigarettes?

- | | |
|---------------------------------|--------------------------------|
| <input type="checkbox"/> 01 Yes | <input type="checkbox"/> 02 No |
|---------------------------------|--------------------------------|

If yes, and you are currently smoking, how many cigarettes do you smoke a day? _____

If yes, and you have quit, how long (yrs) have you been smoke free? _____

Do you consume at least 5 servings of fruits and vegetables daily?

☐ 01 Yes

☐ 02 No

Do you exercise at least 180minutes weekly or for at least 30minutes 5 times a week?

☐ 01 Yes

☐ 02 No

Are you of Hispanic or Latino origin or descent?

☐ 01 Yes, Hispanic or Latino

☐ 02 No, not Hispanic or Latino

☐ 97 Don't know

☐ 98 Refused

What is your race? Please choose the one you most identify with:

☐ 01 White

☐ 02 Black or African American

☐ 03 Asian

☐ 04 Hawaiian or Pacific Islander

☐ 05 Native American or Alaskan

☐ 06 Other _____

☐ 97 Don't know

☐ 98 Refused

What is your marital status

☐ 01 Married

☐ 02 Partnered

☐ 03 Separated

☐ 04 Widowed

☐ 05 Never married

☐ 06 Single

☐ 07 Other (_____)

☐ 99 No answer

Appendix J: Focus Group Guidelines

Guidelines for Focus Group Discussion

1. Welcome the group: Explain the background. (Hand out a different pseudo-name to each person)
Good morning (or evening) and welcome to our meeting. Thank you for taking the time to join this discussion. Our study goal is to have a better understanding why nurses engage or do not engage in health promoting behaviors.

2. Make introductions (Start the recorder)
I would like to introduce myself and the observer. My role here is to ask questions and to listen. I won't be actively participating in the conversation, only guiding it. I'll also move the discussion from one question to the next to try to keep us on track so that we can finish by on time. The observer will take notes during our discussion. She/He will not record your name on the sheet but she will identify you with your assigned pseudo-name.

Please introduce yourself by calling out your pseudo-name and then sharing where you work and how long you have worked there.

3. Provide an overview of the objectives and process of the focus group
We're primarily interested in finding out about your experience (thoughts and ideas) with engaging in health promoting behaviors. There are no right or wrong answers, because everyone experiences things and thinks differently. We are interested in the full range of experience and opinion, so please feel free to share your point of view even if it differs from what others have said.

4. Provide discussion group rules
Before we begin, let me suggest some guidelines that will make our discussion more productive.
Please speak up: Only one person should talk at a time
Please before you speak, tell us your number
If you need to go to the bathroom or want to get up and get more to drink during discussion, please feel free to take care of your needs.
If you would like to add to our comments after the group, we will be around to talk you privately.
Any questions before we start?

5. Begin discussion

DISCUSSION #1 (20 minutes)

Introduction:

- *Let's begin. I would like to start by exploring the image of a healthy nurse.*

Question:

- **How would you define a healthy nurse?**

Probing questions:

- What does health mean to you?
- Should the definition differ for the nurses vs. the general population?

DISCUSSION #2 (25 minutes)

Introduction:

- *CDC (Center for Disease Control) defines healthy promoting behaviors as non-smoking, maintaining a healthy BMI, consuming 5 servings of fruits and vegetables*

Question:

- **Why do some nurses engage/not engage in these healthy behaviors?**

Probing questions:

- *Are there characteristics of being a nurse that may hinder nurses from engaging in healthy behaviors?*
- *What are some other factors that may influence nurses' decisions in engaging in healthy behaviors?*

DISCUSSION #3 (15 minutes)

Introduction:

- *There are studies that have shown that healthcare providers who engage in healthy behaviors are more likely to provide education on healthy behaviors to their patients.*

Question:

- *Do you think the health practice of the nurse influence their educating the patients on topics of healthy behavior?*

Probing questions:

- *Do nurses feel comfortable in educating the patients (or patients' family) on healthy behaviors?*
- *How well do you think patients are likely to be receptive to the teachings from a healthy nurse vs. an unhealthy nurse?*

DISCUSSION #4 (15 minutes)

Introduction:

- *This discussion may be appropriate because it is the beginning of the year. People often say, I want to be healthier than I am currently. Although, behavior change is an individual process, I would like to explore how we can change the culture of health among nurses at our workplace.*

Question:

- **Can you think of any strategies or programs that may assist nurses in engaging in all four of the healthy promoting behaviors?**

Probing questions:

- *Are you, yourself, in the process of making any healthy choices?*
- *How could the workplace help you?*

6. Conclude the discussion

We had a great time. Today, we shared our definitions of a healthy nurse. We shared ideas why nurses do or do not engage in healthy behaviors. We shared our ideas on the ways in which nurses can engage in healthy promoting behaviors at our workplace.

7. Provide a time for questions

Do you have any questions? Is there anything else you would like to add?

8. Close

Thank you for your participation. Your opinions will be contributing to understanding nurses and their engagement in health promoting behaviors.

Appendix K: Survey Questionnaire

Study Title: Barriers and Facilitators of Engaging in Health Promoting Behaviors among Nurses
Application No: NA_00076097

A. Basic Information

A1. Current weight: _____ lbs or _____ kgs

A2. Current height: _____ ft _____ in or _____ cms

B. Individual Characteristics

B1. Age: _____ (yrs old)

B2. Are you of Hispanic or Latino origin or descent

- ☐ 01 Yes, Hispanic or Latino ☐ 02 No, not Hispanic or Latino
☐ 97 Don't know ☐ 98 Refused

B2. What is your race? Please choose the one you most identify with:

- ☐ 01 White ☐ 02 Black or African American
☐ 03 Asian ☐ 04 Hawaiian or Pacific Islander
☐ 05 Native American or Alaskan ☐ 06 Other _____
☐ 97 Don't know ☐ 98 Refused

B4. Marital status

- ☐ 01 Married ☐ 02 Partnered
☐ 03 Separated ☐ 04 Widowed
☐ 05 Never married ☐ 06 Single
☐ 07 Other (_____) ☐ 99 No answer

B5. You are currently:

- ☐ 01 Working full time ☐ 02 Working part time

B6. Which shift do you work:

- ☐ 01 Day shifts / A shifts ☐ 02 Evening shifts
☐ 03 Night shifts / P shifts ☐ 04 Rotating shifts

B6. Nursing educational background:

- ☐ 01 ASN/ADN ☐ 02 Diploma
☐ 03 BSN ☐ 04 MSN
☐ 05 PhD/DNS/DNP ☐ 06 Other: _____

B8. Years of Nursing Experience

- ☐ ₀₁ less than 1 year ☐ ₀₂ 1 year to less than 3 years
☐ ₀₃ 3 years to less than 5 years ☐ ₀₄ 5 years or less than 10 years
☐ ₀₅ 10 years to less than 20 years ☐ ₀₆ 20 years or more years

B7. What unit do you mainly work on:

- ☐ 01 Adult Emergency Medicine
☐ 02 Critical Care
☐ 03 GYN/OB
☐ 04 Medicine

- ☐ 05 Neurosurgery & Neurology
- ☐ 06 Oncology
- ☐ 07 Ophthalmology
- ☐ 08 Outpatient
- ☐ 09 Pediatrics
- ☐ 10 Psychiatry
- ☐ 11 Radiology
- ☐ 12 Rehabilitation
- ☐ 13 Surgery

B9. Please rate your physical health

- ☐4 Excellent ☐3 Good ☐2 Fair ☐1 Poor

B10. Please rate your mental health

- ☐4 Excellent ☐3 Good ☐2 Fair ☐1 Poor

B11. Have you ever smoked cigarettes

- ☐ 01 No ☐ 02 Yes

If you currently smoke, how many cigarettes do you smoke a day _____

If you quit smoking, how long have you quit for _____ yrs

B12. How comfortably can you live with your present income?

- ☐ 05 Very comfortable ☐ 04 Comfortable
☐ 03 It's OK. ☐ 02 Difficult to manage
☐ 01 Very difficult ☐ 99 No answer

B13. Do you have any of the following health problems?

Problems	Do you have the problem	
	Yes	No
Heart disease	Yes	No
High blood pressure	Yes	No
Lung disease	Yes	No
Diabetes	Yes	No
Ulcer or stomach disease	Yes	No
Kidney disease	Yes	No
Liver disease	Yes	No
Anemia or other blood diseases	Yes	No
Cancer	Yes	No
Depression	Yes	No
Osteoarthritis, degenerative arthritis	Yes	No
Back pain	Yes	No
Rheumatoid arthritis	Yes	No
Other medical problems: _____	Yes	No

C. Health Promoting Lifestyle Profile II

DIRECTIONS: This questionnaire contains statements about your *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the frequency with which you engage in each behavior by circling:

l t e	Never	Sometimes	Often	Routinely
C1. Choose a diet low in fat, saturated fat, and cholesterol.				
C2. Limit use of sugars and food containing sugar (sweets).				
C3. Eat 6-11 servings of bread, cereal, rice and pasta each day.				
C4. Eat 2-4 servings of fruit each day.				
C5. Eat 3-5 servings of vegetables each day.				
C6. Eat 2-3 servings of milk, yogurt or cheese each day.				
C7. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.				
C8. Read labels to identify nutrients, fats, and sodium content in packaged food.				
C9. Eat breakfast.				
C10. Follow a planned exercise program.				
C11. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber).				
C12. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week).				
C13. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling).				
C14. Do stretching exercises at least 3 times per week.				
C15. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking car away from destination and walking).				
C16. Check my pulse rate when exercising.				
C17. Reach my target heart rate when exercising.				

D. General Self-Efficacy Scale

Four response categories are provided for each item:
Not at all, Hardly true, Moderately true, Exactly true.

Items	Not at all true	Hardly true	Moderately true	Exactly true
D1. I can always manage to solve difficult problems if I try hard enough.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
D2. If someone opposes me, I can find the means and ways to get what I want.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
D3. It is easy for me to stick to my aims and accomplish my goals.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
D4. I am confident that I could deal efficiently with	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁

unexpected events.				
D5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
D6. I can solve most problems if I invest the necessary effort.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
D7. I can remain calm when facing difficulties because I can rely on my coping abilities.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
D8. When I am confronted with a problem, I can usually find several solutions.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
D9. If I am in trouble, I can usually think of a solution.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
D10. I can usually handle whatever comes my way.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁

E. Health Behavior Intention Scale (HBIS)

Check off where in the scale from “don’t intend at all” to “strongly intend” for the following items.

Which intentions do you have for the next weeks and months? I intend to...	Don't Intend at all Strongly Intend						
...live a healthier life.	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
...eat as healthy as possible.	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
...eat as little fat as possible (i.e. avoid fatty meat, cheese, etc.).	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
...do more for my health.	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
...quit smoking.	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
...eat low-salt food.	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
...drink less alcohol.	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
...participate in a medical examination for early detection of cardiovascular diseases.	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
...exercise regularly (at least once a week).	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
...lose weight.	<input type="checkbox"/> ₇	<input type="checkbox"/> ₆	<input type="checkbox"/> ₅	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁

F. Planning

Four response categories are provided for each item:
Not at all, Hardly true, Moderately true, Exactly true.

Items	Not at all true	Hardly true	Moderately true	Exactly true
F1. I have already planned precisely to stop smoking or never to smoke.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
F2. I have already planned precisely to eat five servings of fruits and vegetables daily.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
F3. I have already planned precisely to exercise at least 30 minutes 5days/week.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁
F4. I have already planned precisely to keep my weight within the recommended BMI.	<input type="checkbox"/> ₄	<input type="checkbox"/> ₃	<input type="checkbox"/> ₂	<input type="checkbox"/> ₁

G. Work-Related Stress

Four response categories are provided for each item:
Never (0), Occasionally (1), Frequently (2), Very frequently (3)

I t e m	Never	Occasionally	Frequently	Very Frequently
Factor i: work load				
G1. Breakdown of the computer				
G2. Unpredictable staffing and scheduling				
G3. Too many non-nursing tasks required, such as				
G4. Not enough time to provide emotional support to a				
G5. Not enough time to complete all of my nursing tasks				
G6. Not enough staff to adequately cover the unit				
Factor ii: death and in dying				
G7. Performing procedures that patients experience as				
G8. Feeling helpless in the case of a patient who fails to				
G9. Listening or talking to a patient about his/her				
G10. The death of a patient				
G11. The death of a patient with whom you developed a close relationship				
G12. Physician not being present when a patient dies				
G13. Watching a patient suffer				
I t e m	Never	Occasionally	Frequently	Very Frequently
<i>Factor iii: inadequate preparation</i>				
G14. Feeling inadequately prepared to help with the emotional needs of a patient's family				
G15. Being asked a question by a patient for which i do not have a satisfactory answer				
G16. Feeling inadequately prepared to help with the emotional needs				
<i>Factor iv: lack of staff support</i>				
G17. Lack of an opportunity to talk openly with other unit personnel about problems on the unit				
G18. Lack of an opportunity to share experiences and feelings with other personnel on the unit				
G19. Lack of an opportunity to express to other personnel on the unit my negative feelings toward				
<i>Factor v: uncertainty concerning treatment</i>				

G20. Inadequate information from a physician regarding the medical condition of a patient				
G21. A physician ordering what appears to be inappropriate treatment for a patient				
G22. A physician not being present in a medical				
G23. Not knowing what a patient or a patient's family ought to be told about the patient's medical condition and				
G24. Uncertainty regarding the operation and functioning of specialized equipment				
<i>Factor vi: conflict with physicians</i>				
G25. Criticism by a physician				
G26. Conflict with a physician				
G27. Fear of making a mistake in treating a patient				
G28. Disagreement concerning the treatment of a patient				
G29. Making a decision concerning a patient when the physician is				
<i>Factor vii: conflict with other nurses</i>				
G30. Conflict with a supervisor				
G31. Floating to other units that are short-staffed				
G32. Difficulty in working with a particular nurses (or nurses) outside				
G33. Criticism by a supervisor				
G34. Difficulty in working with a particular nurse (or nurses) on the				

H. Social Support Scale

Please check off the response to each question as to how true the statement is concerning the person or persons indicated.

H1. How much can each of these people be relied on when things get tough at work?	Not at all true	A little true	Somewhat true	Very much true
1a. Your immediate supervisor (boss)				
1b. Other people at work				
1c. Your spouse/partner (or check off single <input type="checkbox"/>)				
1d. Your friends and/or relatives				
H2. How much is each of the following people willing to listen to your work-related problems?	Not at all true	A little true	Somewhat true	Very much true
2a. Your immediate supervisor (boss)				
2b. Other people at work				
2c. Your spouse/partner (or check off single <input type="checkbox"/>)				
2d. Your friends and/or relatives				
H3. How much is each of the following people helpful to you in getting your job done.	Not at all true	A little true	Somewhat true	Very much true

3a. Your immediate supervisor (boss)				
3b. Other people at work				
3c. Your spouse/partner (or check off single <input type="checkbox"/>)				
3d. Your friends and/or relatives				

I. Hardiness

Below statements about life that people often feel differently about. Please check a box to show how much you think each one is true for you. Give your own honest opinions... There are no right or wrong answers.	Not at all true	A little true	Quite true	Completely true
I1. Most of my life gets spent doing things that are meaningful.				
I2. By working hard you can nearly always achieve your goals.				
I3. I don't like to make changes in my regular activities.				
I4. I feel that my life is somewhat empty of meaning.				
I5. Changes in routine are interesting to me.				
I6. How things go in my life depends on my own actions.				
I7. I really look forward to my work activities.				
I8. I don't think there is much I can do to influence my future.				
I9. I enjoy the challenge when I have to do more than one thing at a time.				
I10. Most days, life is really interesting and exciting for me.				
I11. It bothers me when my daily routine gets interrupted.				
I12. It is up to me to decide how the rest of my life will be.				
I13. Life in general is boring for me.				
I14. I like having a daily schedule that doesn't change very much.				
I15. My choices make a real difference in how things turn out in the end.				

Appendix L: Themes with quotes

Barriers - External		
<i>Categories</i>	<i>Subcategories</i>	<i>Supporting quotes</i>
Environment	Unhealthy food as reward	FG#1 page 1. Dottie-. But food though, is used as a reward. We just talked about Nurses' Week and someone said how every day, a physician group provided a different meal, families bring in food pretty constantly, um when a family is usually happy with things,, FG2pg3 Cali- I walk on to that floor, they have the worst food. I am like stop bringing in the donuts. For nurse's week, every day there were cookies, there were cakes, there were white bagels and you know. I am like, come on, bring me something good to eat, something healthy food. FG3pg1 Martha- one way to reward everyone was giving everyone food, so pizza every night and cake. It's great but it was lots of pasta – not whole grain and not very nutritious. So I think that's mixed messages for nurses.
	Poor food choices	FG1pg6, Betty- Vending machine for us, you can tell all the wonderful thousand calorie snacks and the sodas. FG2pg2 Jean,-And in the vending machines right now are high carb, high calorie snacks. FG1pg7Flo-there isn't any in the building for the staff to go to like after hours. FG1pg7Maddie- You have a choice of going to the other building which takes half of your lunch break if you are lucky to get a lunch break which not everybody does or you have Balduccis which cost \$20 for a sandwich. So if you don't bring a healthy lunch well, the vending machine is looking kinda good right now. FG3pg9Ida- at far as the facilities, for the night shift, I think they should, I mean they have subway opened 24hrs, and from 23 years ago, all they had was a vending machine, it's is better...but it would be nice to have a little bit more-healthier choices at night.
Peer pressure	Co-workers eating unhealthy	FG1pg3, Betty- As nurses, we tend to pack a nice lunch but when everybody else in front of you having a nice baked ziti, and you say no, I am not going to have (my nice lunch) and instead you go to subway
	Smoke breaks	FG3pg3Martha- there is also a group in ED that all smoke. And so, they are all really close because they go out and smoke together. It is another way they congregate together because they all share this bad behavior. FG3pg3Kat- noticed when certain nurses work together, they take more frequent breaks outside. If they don't work together, they don't smoke at all during the shift.
Work-related stress	Sick patients	FG2pg2Jean- you are dealing with people's lives. Sometimes you have people in the balance between life and death and that is stressful in itself, just dealing with family members and their coping process with it, then dealing with the patients, making sure that they are comfortable. FG2pg2Cali- we forget how those types of crisis will affect everyone. We had to be patient focused .. when

		the patients die, it's hard on the families, but many of our nurses are much attached to those patients as well... And then you go home and no one wants to hear about it or they don't understand it. you know and so it gets swept to the back of your mind, there is a room back here (pointing to her head) where you put all in.
	Increased workload	FG1pg7Betty - healthcare and shortage and the budget problem, everything here is now negative it does impact especially the young generation. ..There is no clerk tonight and so you are going to be the clerk and the charge nurse have all these nurses and all these patients... It is too much. FG2pg2 Patty-We are not just the nurse. Sometimes, we are the therapists, we are the secretary, and we basically help all the other professions connect. ..And then you also have to take the attitude of your co-workers and so all of that together creates stress, especially in a 12 hour shift and you know that you are not really leaving in 12 hours...you are leaving more like 16hours late, so you know it's a 16 hour shift basically. And so it is very stress induced.
	Constant changes	FG1pg6Dottie - we are being bombarded with change and that is increasing the stress level. Every turn of the corner we are doing something new or something different... we get these crush of information from central nursing, you know, clinical monthly update with six attachments... it is bringing their stress level up which I think it contribute to more unhealthy behaviors. FG4pg2 Ginnie - I think for me, it was hard for me to adjust to the work schedule and the job itself and being in a new place – all that kind of stress has made me regress in my healthy habits. FG1pg7Maddie- they are constantly chipping away at our benefits, little at a time. Everything is disappearing that you are used to getting. So that is an extra stress too because you are wondering what else they are going to take from you. So you do feel more stress every time any little thing is taken because you are wondering what's next.
12 hr shifts	Lack of time	FG2pg2 Jean- And also with the time factor is we probably don't have the time to prepare fruits and vegetables and shop right, that kind of stuff. FG4pg2 Rosie - But working 14 hour days, I don't go to the store after work, and so, if I work 3 days in a row and I run out, then I am having a hotpocket for lunch the next day FG1 page 2. Maddie - at the end of a 12 hour day...there is very little time in a day and so...it doesn't want to make you wanna go to the gym or take a long walk because there isn't much time left to get stuff done.
	Too tired	FG1 page 2. Maddie - at the end of a 12 hour day, you are exhausted. So, you don't have much energy to take care of yourself anymore. And if you have to go home to take care of kids, husbands, and animals at home and so it is a lot of stress. There is very little time in a day and so...it doesn't want to make you wanna go to the gym or take a long walk because there isn't much time left to get stuff done. FG4pg2 Kat - I don't engage in those healthy behaviors because I am so tired when I get home from

		<p>working 12 or 16 hours, chasing the kids around for 12 to 16 hours a day because my patients are not confined to a bed</p> <p>FG4pg5Ginnie - You know what it is, it is like hard work. Exercise and all that other stuff, it doesn't seem like you are taking care of yourself but the moment you are like doing it, you are like I am back from work, and you are like I am going to hit the treadmill again, it almost seems like you are punishing yourself...For instance, having chocolate or ice cream or sitting watching tv or just de-stressing in that way, it seems like instant gratification.</p> <p>FG3pg1Gene - But with the 12 hour shift, I believe it puts you at an extreme, especially when you work 3-4 days in a row, you are not going to work out on those days. Your diet wasn't probably wasn't that great on those days. And so you are on a roller coaster ride in maintaining your health.</p>
	Too late	<p>FG1 pg 2. Maddie - we work 12 hour shift and you are not supposed to eat at 9-10pm at night ...something I don't eat but I will be eating at 8-9 o'clock. It doesn't matter what I eat because the time is not ideal</p> <p>FG2pg1 Jean-our shift is longer than the working public... Like my husband is a police officer ... because of his long shifts, he gets home at 11 and you can't workout then because you can't go to bed</p>
	Too busy (at work)	<p>FG3pg2 Hilda - In the OB triage we can see up to 30 patients. You skip meals at work and you don't drink well.</p> <p>FG4pg2Rosie - But there are some days you sit down for five seconds and you are running back out. You are not able to eat everything you want to eat.</p>

Barriers - Internal		
<i>Categories</i>	<i>Subcategories</i>	<i>Supporting quotes</i>
Altruistic nature of a nurses	Putting patient first	<p>FG2pg9Patty-The thing is though, before we take our lunch break, we want to make sure everyone doesn't need anything. I go into a room and they need pain medicine and that turns into something else and so you never end up with that break.</p> <p>FG2pg5Jean - That is why we go into nursing to take care of people because of that personality. And those nurses that don't have that personality (don't last in nursing).</p> <p>FG2pg6Patty you would see me working after hours, getting medication for a patient because they asked for it; documenting late because patient care came first.</p> <p>FG4pg5Kat - Ya, how many times have we skipped our lunch break because our patients need something and that is not healthy</p> <p>FG2pg8Jean - That is one of those things as a nurse it is hard to do because you don't want to leave your patients to someone else because they are not going to care for them the same way as you will.</p>
	Making sacrifices	FG1pg3 Maddie - Anybody who do not work nursing do not understand and it's hard to continue to say "I

		<p>can't, I can't, I'm tired and I have this things to do" You end up sacrificing – things you would have done for yourself or sleep. Sleep is the first thing that goes for me.</p> <p>FG1pg4Betty- then I switch around and then I compact 5-6 days in a row so that I can spend time with my child. And those six days, even though I am working days, it is taxing on my body</p>
	Caring for co-workers	<p>FG1pg3, Betty- You are a mom to everybody- even your staff, you take care of everyone. Especially, when I am in charge, I make sure Maddie, Dottie, and Flo eat lunch and I would be the last person to eat.</p> <p>FG3pg3Hilda- I think the unit and helping each other, I want to say couple of years ago, we all did the biggest loser weight loss thing. We had two different teams and 30 of us did it. I don't get that support at home because I think your loved one are around you. When you go home and are exhausted, I am not pushed to get on a treadmill. I tend to do it by myself because no one is pushing me.</p> <p>FG2pg5 Cali-And then I was sick for two weeks. Did I come to work, of course, I came to work because they would have died without me.</p>
	Saving the world mentality	<p>FG2pg5 Cali - Everyone depends on us so we gotta save the world. We have to come in dying because we have to save the world, you know. My husband says that that building will not implode if you do not go in.</p> <p>FG2pg5 Jean- I think as nurses, that carries into our personal lives too. I feel like everyone at church depends on me, I am supposed to be doing everything otherwise something is going to go wrong.</p> <p>FG4pg5Rosie-as in this profession, that is what we do. We do everything for everyone else. We leave ourselves in the dust.</p>
Knowledge	Taking care of ourselves	<p>FG4pg1Rosie - we are more responsible for health in general since we have more knowledge.</p> <p>FG4pg2 Kat - nurses feel that we have answers for it all and we take care of ourselves and we don't need to have other people's input. Nurses make horrible patients, so um, I think we tend to take of ourselves instead of seeking outside, we are not going to seek a personal trainer because we think we can do it on our own. We are not going to go see a nutritionist because we have the education and can make healthy choices ourselves.</p>
Excuses	Physical at work	<p>FG3pg5Gene - don't think the job itself promotes health. We work long hours, we work on our feet.</p> <p>FG1, pg2 Betty-it is already a work out for us or at least we think it is but it is not, it is not a total aerobic exercise but you do sweat, especially when you work in the ED, when you have a chest pain coming in or all the traumas, or in the ICUs when you have someone hypertensive and when you get out of the room sweating, you think you worked so hard but it is not a total workout.</p> <p>FG4pg5kat-we justify being on our feet all day, running up and down the halls. You know, we justify that I don't need to go the gym today because I spent two and a half hours chasing patient X around the unit, so</p>

		<p>you can justify that, ok, I did my physical activity for the day. We justify our own behavior.</p> <p>FG4pg5Rosie-We, as nurses, feel like other people sit at a desk all day but we are on our feet, moving, lifting, running, like it's more activities than the regular population with normal jobs.</p>
	Bad behaviors as a child	FG4pg2 Rosie- I think that eating five fruits and vegetables thing, I know that I personally really struggle doing that. When I was raised, we didn't do that. We had carrots with dinner and that was our vegetables for the day.
Facilitators - External		
<i>Categories</i>	<i>Subcategories</i>	<i>Supporting quotes</i>
Environment	Designated smoking areas	FG3pg4Hilda- I find that interesting because we moved to a non smoking facility and the smoking areas are further away. I know that there aren't many nurses who smoke on our unit.
Peer pressure	Co-workers eating healthy	<p>GF4pg4 Ginnie- So, when you see people eating healthy, happy with their salad, it encourages you also, like oh, my lunch should be a little more healthier because everyone else is eating healthy (laughing).</p> <p>FG4pg3Kat- As for the support, if you see everyone else doing it, you are going to do it too.</p> <p>FG3pg6Hilda- instead of everybody ordering out Indian, why don't we all bring in fruits, vegetables, and ... kinda changing the culture. I think changing culture is hard; it's a slow process but you gotta start somewhere.</p> <p>FG3pg8Martha - if you have pressure from your peers, you are more likely to eat better. It is opposite of the negative pressure of smoking, a positive pressure to eat healthy.</p>
Social support (at work)	Accountability	<p>FG4pg4 Rosie - as a unit ... everyone works together to manage health together and eat better, and exercise more – kind of encourage each other. And like talk about “I lost five pounds this week.”</p> <p>FG3pg3 Hilda-. And when we are here at work together, we can encourage one another to go get a salad instead of going to flammers... I don't get that support at home because I think your loved one are around you. When you go home and are exhausted, I am not pushed to get on a treadmill.</p>
	Empathy from co-workers	<p>FG1pg5Dottie - that people who are not in this profession don't necessarily always get it... I think there is a need for nurses to sort of...if you want to say bond with people who do get it. And this becomes their work group. I think the culture of each unit will be very very different.</p> <p>FG2pg8Patty - the people at work... You go through them that you never would with your family. They will experience with you your worse moment. ... Someone you can talk to and express certain things that you can't necessarily say to your family members.</p> <p>FG2pg8Cali, we walk off the unit during lunchtime ... just go to sit and not to be surrounded by anyone</p>

		else. We will talk about sometimes we talk about our personal life but a lot of times we would run through our scenarios and that kind of thing
	Teamwork	FG3pg3Gene - If you have good teamwork at work, it makes your job more enjoyable and positive.... people are eating unhealthy or smoking, it is the alone times when you are stressed out. No one is obligated to come into your room and say hey. But having someone do that makes it a lot easier. I think the stress level goes down when that happens. FG3pg4Gene- Maybe with teamwork, I think about my pals at work, all of a sudden, it is comical and you go in there and make the best of the situation. So, there is pleasure involved in that. With laughter, there's endorphins rushes, you get the good hormone. So, maybe the pleasure is being substituted in some way.
	Second family	FG2pg7 Jean - You are almost around your co-workers more than you are around your family. ...But as work, you get social support all day long as long they promote good things. FG3pg3 Hilda- When you work in a place, when you work for 12 hour shifts and your work the 3 rd weekend, you tend to work with the same group of people so that becomes your second family. And when we are here at work together, we can encourage one another to go get a salad instead of going to flammers. FG2pg8Patty- the people at work, like you said, you see them more than your own family. You go through them that you never would with your family. They will experience with you your worse moment. You know you may have something that may change your life with them. So, that social support is critical in nursing field and for you to survive. Because if you don't have it, you are alone and you can't enjoy it and you want to get out it.

Facilitator - Internal		
<i>Category</i>	<i>Subcategory</i>	<i>Supporting quotes</i>
Strength of a nurse	Functioning well under stress	FG1pg8 FLO - One of my friends, she totally turns off that part of the brain. She is never on time, she couldn't be on time to save her life and her bills but she functions amazingly when she is in a situation (at work as a nurse). FG2pg3 Cali -it doesn't really matter where you are. There are always such crisis incidences that will just floor you and that is where your medal as a nurse comes up. You either step up and you survive it and you do well in it or you don't and those are the people who walk away from nursing. . FG1pg8Dottie-Sometimes I am not as efficient at home and I don't know if it is because I have spent myself and I am so exhausted. All of a sudden some little kink is a tragedy which wont' be here (at the hospital).
	Building resilience	FG4pg6 Ginnie - I think we are more in touch with our emotions, so we are more emotionally stable, hopefully. I feel like we are able to have empathy and like a lot of good qualities that is good for you not

		<p>only at a physical level but also at spiritual level in a self-developmental way.</p> <p>FG1pg8, Dottie - I also believe there is a resilience that we possess. And what I have seen over the years ... is that people come with baseline fundamental abilities as nurses, nurses that go on to be successful. And they can certainly nurture them and grow them.</p> <p>FG4pg4 Rosie - So you have to have a quality of resilience, I guess. You gotta stick with it to help kids and their families go through what they are going through because that is the process of helping them to get home again. ... We be their support system for them. I think doing this over the last few years and exposing myself made me feel more resilient and stronger and better capable of dealing with this sort of things. And when these problems arise with my family or be very ill, I can be a stronger figure in the group. Kind of like stepping up because I deal with this.</p>
	Leaving work at work	<p>FG1pg3Dottie- I think we really need to work on separation ... “ I have completed my responsibilities here and I have to leave them and I have to purge myself and move onto the next phase like coming home from work to make breakfast or whatever it is.</p> <p>FG1pg8, Maddie - you have to have the ability to brush it off at the end of the day. You have to. You can't take that home. Otherwise you are gonna find yourself with more stress, lack of sleep and improper eating habits. You gotta be able to manage your stress and let thing go at the door. We don't let everything go but for the most part, when I leave here at 7:30, I have to be able to say it is somebody else's turn to take over for me.</p> <p>FG2pg3 Patty- like say a patient is dying and you see a patient die, you take that with you. And when you go home, and you tell your family about it, they don't understand it...(so) you leave it at the door. Just like you try to leave the problems at the door before you get to work</p>
Knowledge	Good understanding	<p>FG3pg8 HIilda - I think our knowledge of it. We all are aware of it. We are all aware of how to be healthy; what's nutritious and what is good for you.</p> <p>FG2pg1, Jean - you are practicing what you are preaching that they would be more likely to rise to your level to where you are. I think it is more credible if you are trying to teach something that you are preaching. Just like the law, when you see them speeding by you all the time in their personal vehicles, it makes you feel jipped or it makes you feel cheated. And so when someone is teaching you heart healthy diet but they are very much overweight, it makes you feel like well if they don't believe what they preach, then why should I do it, how is it gonna benefit me if they are doing the same thing.</p> <p>FG4pg1 Rosie - I think we are more responsible for health in general since we have more knowledge... I don't know if that is me growing up more or if that is nursing in general- that I have a broader view of things.</p> <p>FG4pg4 Kat- Seeing sick patients helps us want to be more healthy.</p>

Motivations	Learned behavior as a child	FG3pg6 Gene- people who are more naturally more healthy, based on how they were brought up; their mom making them eat servings of fruits and vegetables or they naturally enjoyed the taste of fruits and vegetables.
	Ready to change	<p>FG3pg4 Hilda- I think it is a personal drive.</p> <p>FG3pg7 Martha - I think it is how much they are motivated. It depends on their level of motivation. ... but I want to say is that the reason she lost the weight was because she got motivated.</p> <p>FG3pg9 Martha - perseverance, being a new nurse, I have to motivate myself everyday. I have to give myself pep talks before going into a shift. ... I feel that if people really set their mind to it then they will be able to be healthier and heartier.</p> <p>FG3pg 8 Gene - There are things that can't be healthy for you but they chosen to run their competition. ..Are you gonna use bananas and apples and whole nuts to fuel you throughout the day or are you going to smoke or choose unhealthy food. All these unhealthy food to stimulate you to run the race. It seems like a personal thing. Hey, I can eat this candy bar or I am going to eat that banana. If you are a person who is willing to sacrifice and go beyond and so you eat the banana and work toward being healthy.</p> <p>FG4 pg5 Ginnie-you have that challenge as a nurse because you are like constantly taking care of other people. Then, it is up to you to say, "ok, now I need to take care of myself."</p>

Additional discussions		
Successful programs	Biggest Loser program	<p>FG2pg6Jean,- that I personally enjoy the biggest loser challenge last year. That was fun because our whole group competing and a group we did it against the whole hospital.</p> <p>FG3pg3 Hilda - I think the unit and helping each other, I want to say couple of years ago, we all did the biggest loser weight loss thing. I don't get that support at home...</p> <p>FG4pg4Kat- as a unit, they have talked about it a few times, but we haven't actually initiated it, it is kind of like a biggest loser type thing where everyone works together to manage health together and eat better, and exercise more – kind of encourage each other.</p>
	Buddy system	<p>FG2pg7 Patty-(the buddy system) is unofficial but now that couple of the nurses on the night shift are trying to eat healthy, they will bring healthy snacks.</p> <p>FG4pg3 Kat - Like, let's say that, ok, I eat fast food this many times while I am at work. Why not get a buddy who also does that and you guys agree to do lunch together and bring your lunch instead of going to cafeteria to eat. You don't need a big group, just one person</p> <p>FG2pg8Cali,- If there is an opportunity, then we walk off the unit during lunchtime and we go to the cafeteria, even if we brought our lunches. We just go to sit and not to be surrounded by anyone else.</p> <p>FG2pg8Patty -you said, just getting away from everything. I mean, the job is so demanding that when you</p>

		just take, just catch a breath for a moment. Maybe you can talk about something else with your co-worker that is not related to your job. Just have that moment when you can sit down and relax
Suggestions	Access to healthy options	FG2pg6Cali- But I would give credit to my manager, because in addition to the cookies, she does stock some bananas and apples. FG4pg3 Kat - stop sending Oreos to the unit. They can send carrot sticks. FG3pg9, Ida - at far as the facilities, for the night shift, I...but it would be nice to have a little bit more- healthier choices at night. FG3pg1 Gene-I don't know; maybe bring a fruit basket in the unit. Maybe if a unit came together and be proactive and bring in vegetables as a team and so you can improve the health. FG3pg9 Martha- in the administration office in the ED, they have healthy foods. They have dried almonds in smaller packs like this (pointing to the a small pack of trail mix) and grapes out, yup, only healthy foods. But it is only a smaller little so it is gone in few minutes
	Massage chair	FG1pg5 Maddie - we get monthly staff massages-15 minutes chair massage in the middle of your shift. There are all little things they have put in place show us that this is a hard job. FG4pg3 Rosie- so that people can use it on their lunch breaks...We ended up getting a massage chair
	Unit champions	FG1pg5 Dottie - Yoga classes at the middle of the night... So trying to do it from within, realizing that that is where we are going to get the most support... There are some walking groups that we have participated with the Wellnet during the day. So, I do think that there is some... But you need someone to champion that and support that. Our nurse manager does FG1pg5 Betty - you need someone who will champion. It doesn't have to be a supervisor who does it FG3pg6 Hilda -you need to have some champions that pool together. You know, talk about it at staff meetings or while you are on the unit on lower volume days. Let's get some ideas, let's write it down, let's brainstorm. It is a change of culture. FG3pg8 Hilda Again, I think you need a champion on the unit or champions to facilitate that or get a group together
	Committees	FG1pg5 Dottie- On our unit, we actually have a staff enhancement committee from doing simple things... have little sticky(s) on patients' doors to holding yoga classes at the middle of the night. We push away all these tables and pull out our mats. FG3pg10 Gene - they can make a unit vote and see how many want to make a healthy change FG4pg3 Ginnie - We have committees like, maybe they can incorporate doing things like promoting nurses' health as part of their other duties
	More	FG2pg7 Jean,- I don't know if having posters in place about being healthy. When we were in the historical

	communication	<p>building, we had that walking path on the screen. It's a mile if you walk this. So, something visible.</p> <p>FG4pg3 Ginnie - Advertise like healthy stuff that's going on or like just out tips.</p> <p>FG3pg10 Martha- maybe they can bring more awareness to how unhealthy nurses are? I don't know what the statistics are.</p>
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Curriculum Vitae

PERSONAL DATA

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EDUCATION AND TRAINING

2013	PhD	Johns Hopkins University School of Nursing, Baltimore, MD
2003	MSN, MPH	Johns Hopkins University School of Nursing, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
1994	BSN	University of Massachusetts, Amherst, MA

CURRENT LICENSE AND CERTIFICATION

1995	Registered Nurse	Massachusetts Board of Nursing (License No. R
2001	Registered Nurse	Maryland Board of Nursing (License No. R154231)

PROFESSIONAL EXPERIENCE

03/11-present	Research Assistant	Johns Hopkins University School of Nursing, Baltimore, MD
08/07-10/10	Program Manager	Johns Hopkins HealthCare, Glen Burnie, MD
01/06-08/07	Advanced Practice Case Manager	Johns Hopkins HealthCare, Glen Burnie, MD
10/01-5/05	Research Associate	Johns Hopkins University School of Nursing, Baltimore, MD
08/01-present	Staff Nurse	Johns Hopkins Hospital, Coronary Care Unit, Baltimore, MD
02/99-8/01	Staff Nurse	St. Elizabeth's Medical Center, Coronary Care, Unit Brighton, MA
7/97-2/99	Staff Nurse	Beverly Hospital, Coronary Care Unit, Beverly, MA
04/06-07/97	Charge Nurse	Beverly Hospital, Progressive Care Unit, Beverly, MA
08/95-07/97	Staff Nurse	Beverly Hospital, Progressive Care Unit, Beverly, MA

HONORS AND AWARDS

2013	Johns Hopkins University School of Nursing Scholarship, Baltimore, MD
2012	Scholl Award, Johns Hopkins University School of Nursing, Baltimore, MD
2004-2005	Johnsons & Johnsons Community Health Scholar, Baltimore, MD
2003-2005	Health Disparity for Underserved Population Fellow, Johns Hopkins University School of Nursing, Baltimore, MD
2002-2003	Albert Schweitzer Fellow, Baltimore, MD
1994	Senior Leadership Award, University of Massachusetts, Amherst, MA
1994	Award of Achievement from United Asia Learning Resource Center, University of Massachusetts, Amherst, MA
1988	Honorable Mention for NBA Recognition Award for Outstanding Community, Needham, MA

RESEARCH

Research and Educational Grants

Institutional NRSA Predoctoral Training Grant

Principal Investigator: Jerilyn Allen	Role: Predoctoral Fellow
Agency: NIH/NINR	
Type: T32 NR07968	Period: 09/03 - 08/05

Sponsored Projects

Promoting Health Literacy of African American with Hypertension

Principal Investigator: Benita Walton Moss	Role: Research Assistant
Agency: Center for Cardiovascular Health Promotion	
Type: P30 NR011409	Period: 10/15/12-current

Pilot Testing of High Blood Pressure Self Care Profile

Principal Investigator: Hae-Ra Han	Role: Research Assistant
Agency: Center for Cardiovascular Health Promotion	
Type: P30 NR011409	Period: 10/1/11-11/12

The Experiences and Challenges of Informal Caregiver: A Korean Immigrants Study

Principal Investigator: Hae-Ra Han	Role: Research Associate
Agency: Agency for Healthcare Research and Quality (AHRQ)	
Type: AHRQ Small Research Program (R03 HS013779)	Period: 09/10/03-08/31/05

High Blood Pressure Care for Korean Americans

Principal Investigator: Miyong T. Kim

Role: Research Associate

Agency: AHRQ

Type: 1 R01 HS013160-02

Period: 09/10/03-08/31/06

Developing and Testing a Multilevel Community-Based Smoking Cessation Intervention Program for Korean American Community in Maryland

Principal Investigator: Miyong T. Kim

Role: Research Associate

Agency: Maryland Cigarette Restitution Fund

Type: Faculty Retention Program

Period: 8/1/02-7/31/03

A Multilevel Community-Based Smoking Cessation Intervention Program for Korean American Community in Maryland

Principal Investigator: Korean Resource Center

Role: Research Associate

Agency: American Legacy Foundation

Type: Community Research & Service Program

Period: 7/1/02-6/30/05

Self-Help Program for Korean American Elderly with HBP

Principal Investigator: Miyong T. Kim

Role: Research Associate

Agency: National Institute of Nursing Research

Type: NIH R15 (NR05315-01)

Period: 4/15/01-4/14/03

SCHOLARSHIP

Publications:

Han HR, Lee H, Commodore-Mensah Y, Kim, M. (2013). Development and Validation of the Hypertension Self-Care Profile: A Practical Tool to Measure Hypertension Self-Care. *Journal of Cardiovascular Nursing*

Kim M, Han H, Park HJ, Lee H, Kim KB (2005). Constructing and Testing a Self-Help Intervention for High Blood Pressure Control Program for Korean American Seniors. *Journal of Cardiovascular Nursing*, 21(2):77-84.

Weil, JM & Lee, HH. (2004). Cultural considerations in understanding family violence among Asian American Pacific Islander families. *J Community Health Nursing*, 21(4):217-27.

Hill M, Kim M, Lee H. (2003). Patient related barriers to blood pressure control. In *Hypertension Primer: Essentials of High Blood Pressure* (3rd Ed). JL Izzo Jr. MD & HR Black MD (Eds.). American Heart Association.

Presentations:

Kim MT, Kim KB, Kang J, Ko M, **Lee H**, Park HJ, Han HR. Cultural Influences on Smoking Behaviors of Korean Americans. 132nd Annual Meeting of the American Public Health Association, Washington, DC, November 6-10, 2004.

Han HR, Kim MT, Kang J, Ko M, Pistulka G, **Lee H**, Kim KB. Effective Health Communications: Finding a Right Channel for a Linguistically Isolated Population. 132nd Annual Meeting of the American Public Health Association, Washington, DC, November 6-10, 2004.

Lee H, Han H, Kim MT, Kim KB. Implementing a Multilevel Community-Based Smoking Cessation Program for Korean Americans in Maryland. National State of the Science Conference, Washington DC, October 6 - 9, 2004.

Han HR, Kim MT, Kim KB, Han W, Park H, Pistulka G, **Lee H**. Anti-Smoking Media Campaigns for a Linguistically Isolated Population. National Conference on Tobacco or Health, Boston, MA, December 10-12, 2003.

Kim KB, Han W, Kim MT, **Lee H**, Park H, Pistulka G, Han HR. A Community-Based Smoking Cessation Program for Korean Americans in Maryland. National Conference on Tobacco or Health, Boston, MA, December 10-12, 2003.

Kim MT, Han HR, Park HJ, **Lee H**, Pistulka G. A Community-Based Health Promotion Program for Korean American Elderly: Reaching the Hard-to-Reach Population. 130th Annual Meeting of the American Public Health Association, Philadelphia, PA, November 9-13, 2002.

Pistulka G, Han HR, Park HJ, **Lee H**, Kim, M. Acculturation stress, Social Support and Depression among the Korean American Immigrant Elderly in Maryland. 130th Annual Meeting of the American Public Health Association, Philadelphia, PA, November 9-13, 2002.

Han HR, Pistulka G, Park HJ, **Lee H**, Kim KB, Kim MT. High Prevalence of Uncontrolled Hypertension and Cardiovascular Risk Factors in Korean American Elderly with Hypertension. American Heart Association 75th Scientific Sessions, Chicago, IL, November 17-20, 2002.

PROFESSIONAL ACTIVITIES

2005-present	Inducted Member, Sigma Theta Tau International Honor Society of Nursing, Nu Beta chapter
2004-present	Member, American Nurses Association
2002-present	Member, American Public Health Association
2002-present	Member, Asian Pacific Islander Caucus of American Public Health Association

COMMUNITY SERVICE

1998-1999	Volunteer, Transition House, Battered Women's shelter, Boston, MA
1995-1998	Coordinator, Sandwich Outreach to the Homeless, Boston, MA
1993-1994	Advocate, Everywoman's Center Rape Crisis Hotline, Amherst, MA

TRANSCULTURAL SERVICE

2000	Nurse, Mission Team to Dominican Republic, Boston, MA
1998-2001	Youth Leader, LightHouse, Cambodian Youth Ministry, Lynn, MA
1996	Member, Medical Mission Survey Team to Paraguay, Boston, MA
1993-1994	Elected member, Multicultural Mediation Team, Amherst, MA

EDUCATIONAL ACTIVITIES

Spring 2005	Guest Lecturer, Johns Hopkins University School of Nursing - NR 100.503 Research Design & Methods (3 credits), Graduate level Students: 25
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